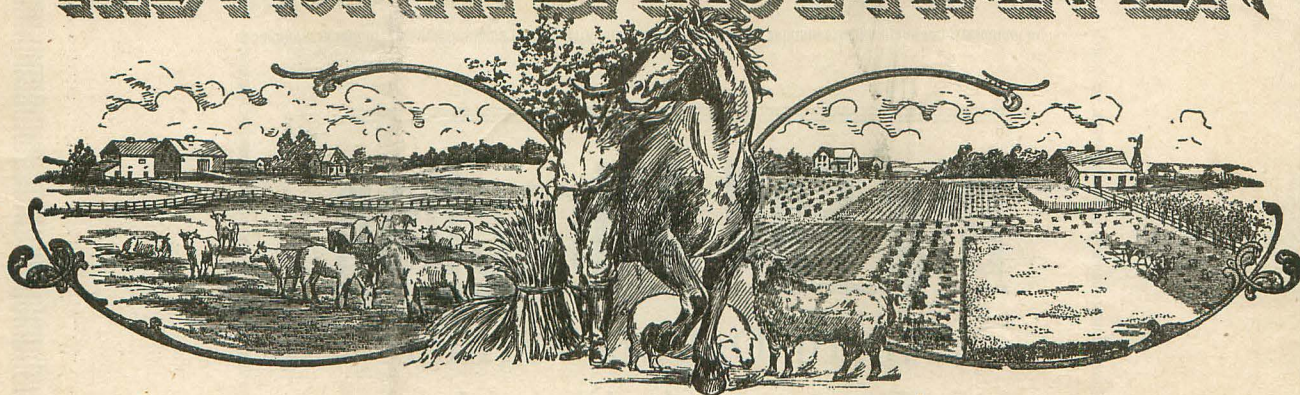


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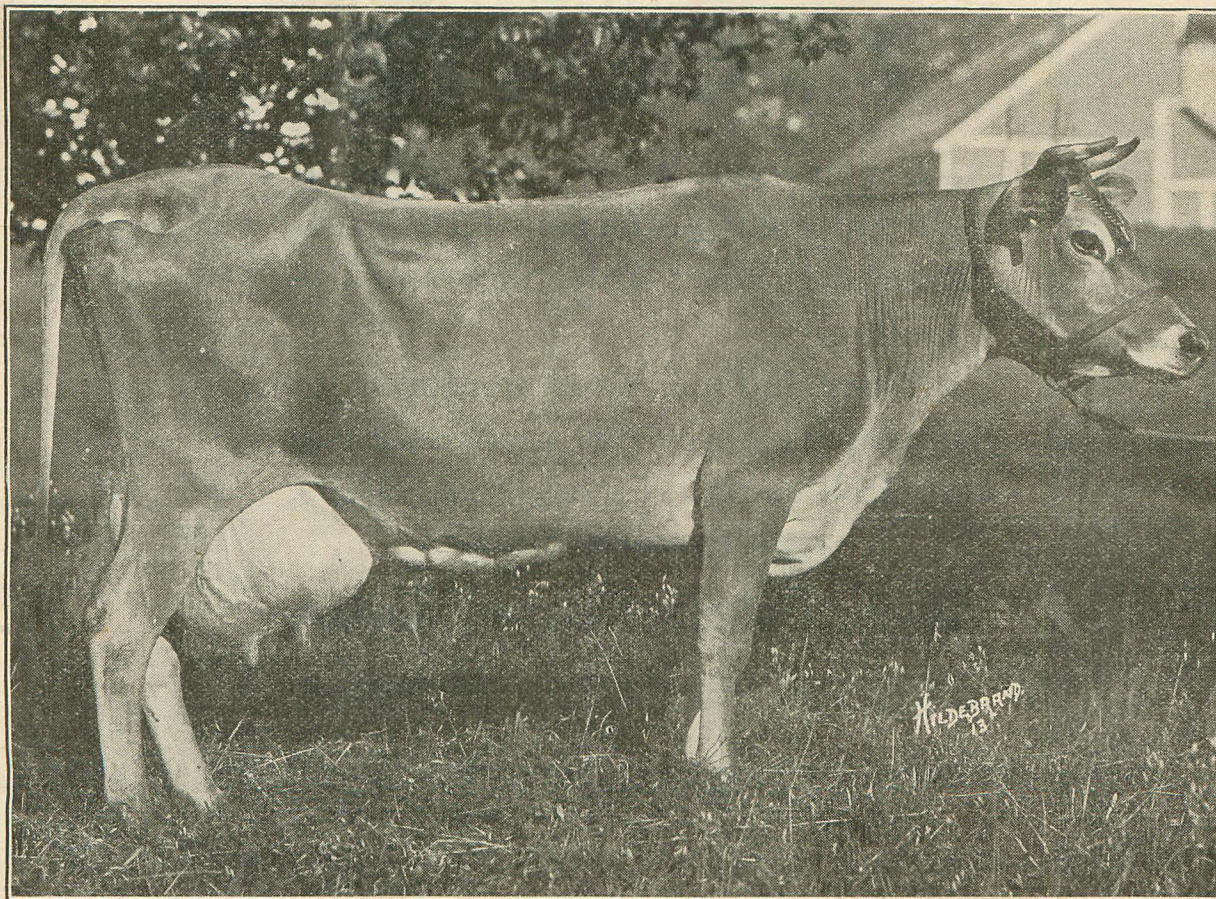


"THE NORTH DAKOTA FARMER FOR NORTH DAKOTA FARMERS"

Vol. 15 No. 4

Lisbon, North Dakota, October 15, 1913

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THE NORTH DAKOTA FARMER

Vol. 15, No. 4

LISBON N. D., OCTOBER 15, 1913

50 Cents a Year

CO-OPERATION

By President J. H. Worst, N. D. A. C.

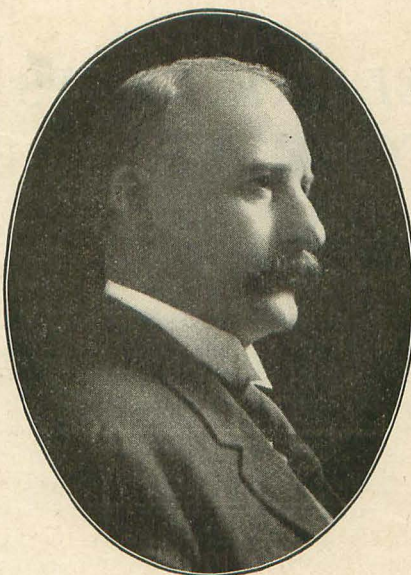
Can the spirit of co-operation be cultivated in farming communities to the point where its good results will be so thoroly appreciated as to make it a general or universal practice? Since those engaged in practically every other kind of business co-operate, and by co-operation facilitate as well as protect their business interests, why should not farmers do the same?

As a matter of fact, the spirit of individualism has kept farmers from co-operating where their interests are mutual. Farmers love to be independent. But are they independent? Are they not less independent than the members of any other business or industry of any considerable importance? True, they can, in a measure, command their time. That is, they can work eighteen, or fourteen, or ten hours a day, or "lay off" entirely for a day, now and then. To a certain extent, this looks like independence, since those working in mines and factories must report for duty on the moment or be docked for being tardy. However, the latter class of laborers, thru the influence of their unions and labor organizations practically fix the scale of wages they are to receive and the hours they must work. The farmer, on the other hand, has nothing to say when it comes to fixing the price of his farm products nor of the things he must purchase for his farm or for the support of his family. His independence certainly ceases with his control of his time and that of his family. When it comes to commanding the time of his employes, quite generally he must pay extra for every minute they work beyond regular hours. Then of late years, transient laborers, especially transient harvest laborers, are not only unreliable and generally unskilful but decidedly "touchy," so much so that their employers must be exceedingly polite, else they call for their pay check on the slightest provocation.

Owing to the fact that good farm labor has become such an important

problem, it begins to look as tho farmers will be compelled, in self-defense, to change their methods of farming. This can be done by cutting out those crops that require so much help for a few weeks only, such as exclusive wheat farming and substituting crops that do not crowd each other.

A farm with crops properly rotated would, of course, grow considerable wheat, but a farm with crops properly rotated would, of course, grow considerable wheat, but giving more



President J. H. Worst

attention to winter rye, barley, oats and flax would distribute the labor over a longer period and enable a farmer to harvest a relatively larger crop with fewer hired men. With a reasonable percentage of the acreage devoted to livestock, there would be corn for the crib and the silo, alfalfa, clover and timothy (in some localities) and meadows, all of which require labor, of course, but not so much attention during the "rush season." Moreover, the winter rye, barley, oats, corn, etc., ground and fed to livestock, together with the ensilage,

will insure a much more reliable profit, and quite generally a much larger profit, than can be realized where the entire farm is devoted to wheat.

There can be no question but that Nature intended North Dakota to become a great livestock state. At least, all the elements are available for the production of livestock, while Dame Nature never intended that this should be an exclusive grain growing state, except temporarily, to give the hardy pioneer a start. Those who persist in working at cross purposes with Nature will get the worst of it every time. The precipitation in the Dakotas is just enough to produce good crops as long as the soil is rich with humus and free from weeds. The longer the land is farmed to small grain, however, the more it becomes polluted with weeds and the less humus it will contain. Both work the wrong way. Either is bad enough, but both taken together make profitable farming exceedingly hazardous, even with the best of tillage. Where, in addition, the tillage is short of the very best, farming simply becomes a losing proposition. There is abundant evidence to corroborate these statements in every neighborhood.

Livestock costs considerable, it is true, but if one begins in time, even in a small way, long before the pioneer privilege of soil exploitation is greatly abused, the livestock will be so augmented in numbers that good profits and abundance of fertility will be realized.

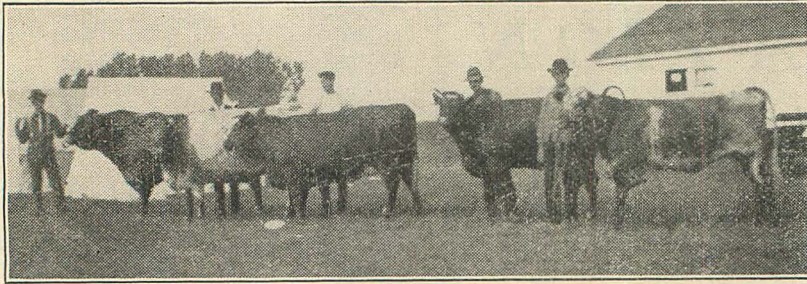
The government has demonstrated that every full-grown cow will, on an average, leave annually \$19.00 worth of fertility on the farm. This item is seldom taken into the account when profits from livestock are being considered. It should be considered, however, for it is the most important product of the cow.

Moreover, the fact that a powerful labor organization this year, at Minot, began the work of unionizing the harvest labor element, demanding excessive wages without any attempt to improve the reliability or efficiency of this form of labor, should prove a warning to farmers to so change their farm management as to make it necessary to employ the least possible amount of transient labor. And this movement to organize against the farmer is but the beginning. When is it likely to end?

In several parts of the state, a group of farmers unite in a co-operative way to harvest and thresh their grain, each assisting his neighbors. This plan should become contagious until the farming communities generally so arrange their farming operations that they become independent of

operate in many ways and be mutually helpful to each other, just as they do in the vicinity of New Salem, Morton County.

Where livestock is given due prominence, co-operation becomes natural, whether for breeding purposes, dairying, or for harvesting and threshing



"Nature Intended North Dakota to Become a Great Livestock State."

transient labor. This can be accomplished in the manner indicated, by forming groups and helping each other. Of course, this method will not appeal to bonanza farmers. However, bonanza farmers are in a class by themselves. Small farmers, on the other hand, that is, farmers operating half-section farms or less, can readily co-

operate in many ways and be mutually helpful to each other, just as they do in the vicinity of New Salem, Morton County. Where livestock is given due prominence, co-operation becomes natural, whether for breeding purposes, dairying, or for harvesting and threshing

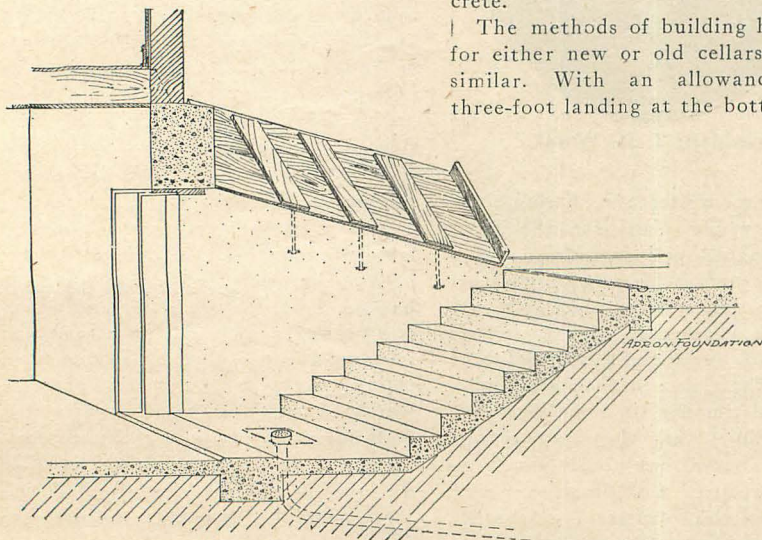
CONCRETE CELLAR STEPS AND HATCHWAY

Construction of Permanent Steps and Watertight Walls

A damp cellar under a dwelling is frequently the unsuspected cause of many a case of sickness. Often this dampness is the fault of a poorly built entrance-way. If water gains access

by means of leaky hatchway walls, the cellar becomes unsanitary and the health of the entire family is endangered. This peril can be dispelled by making the walls and steps of concrete.

The methods of building hatchways for either new or old cellars are very similar. With an allowance for a three-foot landing at the bottom of the



View of Construction of Hatchway

stairs, excavate the opening to the width of steps desired plus one foot. This extra width is for a six-inch thickness of concrete wall on each side. The steps themselves have a rise of six and a tread of nine inches. Beneath the steps proper is a four-inch thickness of concrete. Therefore provide for this thickness in sloping the ground upward from the landing to the top of the stairs. Extend the trenches for the side and end walls one foot below the concrete of the steps. As forms choose two 1 by 12-inch boards and notch them as tho they were to be used as "horses" to support wooden steps of the same dimensions as those of concrete. Place the notched edges down with the ends fixed at the top and bottom of the stairs. To mold the rise of the concrete steps, use 1 by 6-inch boards 3 feet 10 inches long, which are secured to the forms by means of nails and wooden cleats.

With the forms firmly fixed in position, fill the mold for the bottom step, and the space back of it, with concrete proportioned 1 bag of Portland cement to 2 cubic feet of sand to 4 cubic feet of crushed rock. If bank gravel is used, mix the concrete 1 part cement to 4 parts gravel. Bring the concrete in each step to the top of the riser and finish the surface with merely a wooden float. Continue the work upward until all the steps are finished. At the top of the stairs tie the apron foundation to the side walls by means of old iron rods imbedded in the concrete and extending around the corners. This will prevent possible cracking by frost.

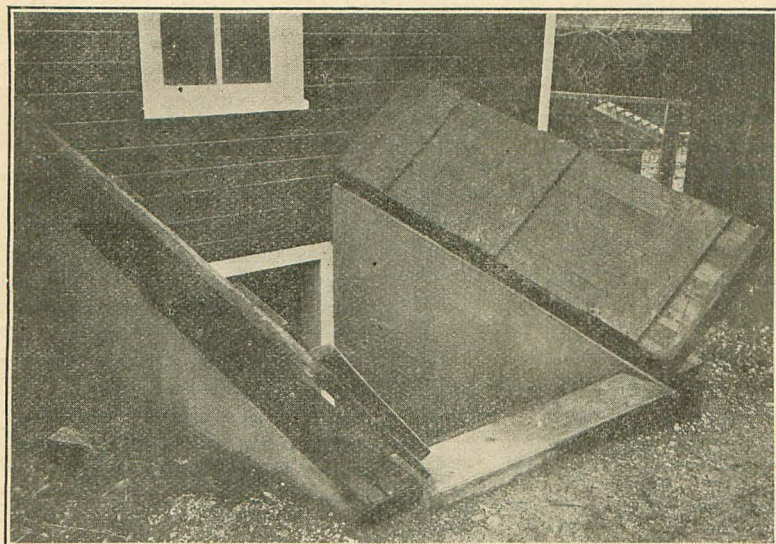
The side forms of the six inch walls are then erected and are thoroly cross-braced against each other. For these forms use 1-inch siding on 2 by 4-inch studding spaced two feet apart. The walls can be carried to any height desired so as to give the cellar doors sufficient slope for shedding rain-water. Above ground line, outside forms must be provided. Fill the walls with concrete mush wet. Before the concrete sets, bolts are placed (heads down and washered) in the top of the side walls for holding the wooden sills to which the cellar doors are hinged. After two to four days the forms can be removed. Connect up the drain in the landing and lay the landing floor.

The eight cellar steps of the hatchway shown in the plan have a tread of nine inches, a rise of six inches and a length of four feet. The clear height of the door-way in the cellar wall is six feet six inches. The landing at the foot of the steps is three by four feet and has a four-inch concrete floor. This same thickness of concrete lies under the steps proper. The side

THE NORTH DAKOTA FARMER

walls were built as described above. For this improvement there were required the following quantities of materials.

earthen slope for the concrete steps. Such filling must be thoroly tamped into place and should be water-soaked and allowed to settle before the steps



Bill of Materials

Crushed Rock, $2\frac{5}{8}$ cubic yards

Sand, $1\frac{1}{4}$ cubic yards

Portland cement, 12 bags

For improving old cellar hatchways it is frequently necessary to fill with earth and gravel so as to provide the

are built.

Concrete steps, unlike other kinds, become stronger with age. They are perfectly safe under the heaviest of loads. Moreover, besides being watertight, they keep out rats, mice and other obnoxious vermin.

the soil and rock waste outside of the valley, both being the Pleistocene "drift" deposit left by the glacier. This drift, left by the ice before the time of the lake, varies from a few feet up to 350 feet in depth—about 220 feet at Fargo.

The sandy beach of this lake fringed it on all sides and, as at Muskoda, Wheatland and Magnolia separated it from the rolling plains of "glacial drift." This drift constitutes the second geological belt, and in area exceeds all other combined, comprising all but the Red Valley and four or five counties in the southwest corner of the state. This latter area is known as the "driftless" area and includes Bowman, Hettinger, Billings, Adams and parts of Morton and Stark counties.

Until recently the Missouri river was considered the southwest boundary of the glaciated area. Lately, owing to the discovery of more western marks and materials of the glacier or the different interpretation of the thin deposits already seen, the so-called "driftless" area is dwindling to a small triangular area in the southwest corner of the state.

From the Agassiz floor to the Bad Lands, the vast expanse of rolling prairie with its fertility, marvelous when under the influence of abundant rain and scientific agriculture, consists of an alternation of "moraines" and intervening "till" plains; the hilly ridges being the morainic deposits of rock, clay and sand made by the glacier when it stood at those particular places. The more level stretches between ridges are the till, or ground moraines, largely material shoved along under the glacier and deposited underneath.

In this vast area loams, sands, silts, and gravels alternate as soil types in order depending largely upon the kind of rock waste brought and dumped there by the glacier. Here and there limited areas enclosed on all sides by the hilly mountains, collected water from melting ice or modern rains and were converted into lakes. Examples are Devils Lake, and its ancient, more expended counterpart, Lake Souris, a large glacial lake of moderate duration, accommodated in the Mouse River Valley. Both of these at one time filled with basins brim full, overflowed to the south, and were drained by the Sheyenne. The ice then obstructed the natural outlet of the Mouse.

The soil of this area as well as that of the Red Valley may be considered as a vast gift of the glacier, and brought without duty, too, mostly from Canada, as it consists largely of limestone, granites, and other rock plucked from the native ledges there, and mixed here with the Pierre shale, which underlies much of the drift and occasionally outcrops, as along our river gorges. Many of the field stones can

The Geological Divisions of North Dakota

Herbert A. Hard, Geologist, N. D. A. C.

Several different ways have been suggested for expressing the geological divisions of North Dakota. Aside from the coal lands, the eastern portion of which is identical with agricultural lands and the western part is in the Bad Lands, we have no division into "mineral" and "non-mineral" areas, as most states have. True, valuable clays are found in almost every county of the state. Again we have no areas to classify as mountains; the Northern Pacific track rises from an altitude of about 910 feet at Fargo to about 2850 feet at Beach, tho some intervening areas are higher. The top of Sentinel Butte, so far as known the highest point in the state, is at an elevation of 3350 feet above sea, 650 feet above the station of that name.

In the absence of other and better means of division, the state, almost wholly agricultural, should be classified in terms of its topography and agricultural worth. The college state geological survey has published two state maps in colors, one of

which shows in a general way the different types of soils in the state, while the other shows the geological divisions.

The first geological division consists of the immediate valley of the Red River—the floor of the ancient glacial Lake Agassiz, comprising roughly the eastern row of counties. This with a corresponding area in Minnesota and Canada is noted for its rich black soil and level topography. The plain table surface is accounted for by the geologist in that it represents the sorting and leveling action of a large lake or sea on its floor. Lake Agassiz had a vast area, extending some 700 miles north and south. As is the custom in all large bodies of water, gravel and sand were deposited near the shore, silt and clay alone being carried in suspension far out, there to be slowly deposited in building up, thru the centuries, the usual monotonously level floor; this on being drained produced our level prairie. Below the lake floor deposit is clay, gravel, and sand mixed in about the same way as

be traced back to the exact beds from whence they came.

The western part of the "drift" area is often underlain with coal, in fact, the western half of the state is largely underlain with this vast rich deposit of Fort Union age. Diagonally across the state in this drift area, runs the Coteau of the Missouri, a name often given to the abrupt slope marking the edge of the plateau forming roughly the western half of the state, which is capped by the roughest morainic hills of the drift. This is seen in Divide, Burke, Ward, McLean, Sheridan, Wells, Stutsman, LaMoure, and Dickey counties. The Turtle Mountains may be considered as an outlier of the beforementioned plateau, and separated from it in the removal by erosion of the intervening rocks.

The third, or "driftless" division comprises the upper parts of the valleys of the Little Missouri, Heart, and Cannon Ball rivers with their enclosing mud walls of the Bad Lands, alternating with the level to rolling prairies on the big lands.

Here for the most part, the prosperous rancher has been forced to give place to the homesteader, who with a deficient amount of rainfall ekes out a miserable existence, until patience and the money with which he came is gone; then he "treks" to a more hospitable climate. This is the rule; however, there are exceptions—notably the Golden Valley and other prosperous areas just out of the Bad Lands. In traveling in the Bad Lands one can not but be forcibly impressed with the great mistake made in ever opening them up for settlement when they could still serve as a prosperous "cow-country."

The Bad Lands are composed of the horizontal sedimentary beds made in a vast inland (Tertiary) sea which occupied certain western states. Here, however the process of pressing, cementing and

heating of the rock waste was stopped too soon. As a result there is very little hard rock of economic value as a building stone in the state. The "scoria" made from the clay and shale, and by the heat of the burning out of great seams of lignite, is a road material equal in value to the artificially "burned clay" used in the southern states.

Dividing the state according to the chief geological time periods we have (1) the Pleistocene Lake Agassiz silt deposit, overlying drift. (2) Pierre shale underlies the drift in nearly all of the eastern half of the state. (3) The Fort Union coal bearing strata of the Tertiary underlies most of the western half of the state.

NORTH DAKOTA HAY CROPS

W. C. Palmer, Agri. Editor, N. D. Agricultural College

There are several crops that may be grown for hay in North Dakota. Clover and timothy do well in the Red River Valley some years. Bromus and slender wheat grass do pretty well for the rest of the state.

None of these can produce as much per acre as does alfalfa, and when raised they have not the feed value pound for pound that the alfalfa has. The alfalfa will grow in all parts of the state where the land is well drained. The alfalfa is also the most drought resistant crop that can be grown in the state. It will produce a crop when all other crops fail.

Alfalfa is harder to start than the common other crops. It is quite delicate the first year. It needs a lot of sunshine so cannot endure being shaded by weeds. By sowing it in June a good many of the weed seeds have little time to grow and can be killed before the alfalfa is planted. A firm

seed bed is wanted so the land should not be plowed the same season the alfalfa is sown. The best land to sow the alfalfa on is that which was manured the year before and either put into potatoes, corn or summer fallow. The seed should be sown with a drill so as to get it all covered, but must not be sown deep. When sown in 6 in. drills 5 to 8 lbs. per acre is sufficient.

It is very important to inoculate, that is, to bring in the bacteria that live on the alfalfa roots. The best way to do this is to get some soil from a field growing alfalfa successfully. This can be sown broadcast at the rate of a sack to the acre. Some drills will sow the soil if it is dry while others will clog and break.

Alfalfa is truly a wonderful plant and can do for North Dakota what it has done for many of the western states.

ACTIVITIES OF STABLE FLY MAY BE CONTROLLED BY PROPER CARE OF STRAW STACKS

This Tormentor of Livestock and Carrier of Diseases Caused \$25,-000 Damage in Northern Texas Last Year and is Particularly Harmful Thruout the United States During the Late Summer.

During the late summer of 1912, the actual death loss of livestock in northern Texas caused by the stable fly is conservatively estimated at \$15,000 in Farmer's Bulletin No. 540, recently issued by the Department of Agriculture. The loss due to the reduction in milk supply may reasonably be placed at \$10,000 and other losses far surpass these two items.

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This only includes a few counties in northern Texas where the fly was most abundant and not its devastations sustained in practically all parts of the United States. The Department's new bulletin is written by F. C. Bishopp, one of its entomological experts, and gives many practical hints regarding the control of this pest.

Besides literally worrying cattle, mules and horses to death and killing them by extracting their blood, the deadly fly also transmits disease from one animal to another. A tropical sickness known as surra is undoubtedly transmitted thus. Fortunately this does not occur in the United States at present, but unless great care is exercised in importing stock it may be introduced at any time and the deadly fly given a chance to spread it. A related disease of cattle, horses, and sheep, known as souma, and a malady of hogs and cats are also carried, at least in part, by this same insect.

Investigators also consider it to be an agent in transmitting glanders, while a disease known as infectious anemia or swamp fever of horses is thought by some to be carried by this fly. A number of years ago it was found to act as a transmitter of a species of roundworm that infests cattle.

Man not Immune from Attack of Stable Fly

Even man may be inoculated with disease by this pest. Septicemia (blood-poisoning) is considered to be carried by it and demonstrations of famous physicians have pointed to the possibility of the transmission of infantile paralysis in the same manner. Thus it will be seen that the transmission of a formidable array of diseases is chargeable to the stable fly.

The stable fly is one of the most widely distributed of insects, being common in both tropical and temperate regions where domestic animals are reared. In regions bordering on the Tropics the flies are of importance thruout the entire year. In the extreme southern part of our country there is no month during the year in which flies are not annoying to horses and cattle. In the northern states, the fly is particularly injurious and abundant in the late summer and fall.

Investigations made during the 1912 outbreak showed clearly that the vast majority of stable flies bred in straw stacks. It was also shown that while the fly breeds in pure horse manure, it favors a mixture of this substance with straw.

The fly was found to be breeding in much greater abundance in oat straw than in wheat straw. Rice straw was also found to furnish suitable breeding conditions and there is little doubt that barley and rye also serve as food for the immature stages of the insect.

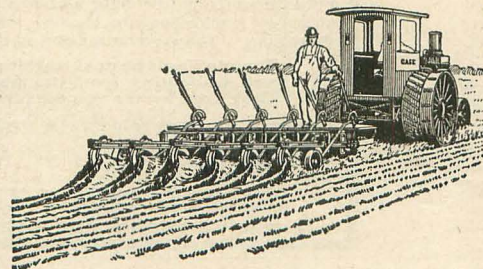
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The development of this insect is somewhat slower than that of the house fly and it is therefore quite necessary that the eggs be deposited in rather large quantities of material for it to breed out successfully.

How to Control This Pest

As with most insects, the destruction of this one when it is actually doing the injury is what is most desired by those concerned. With this species, as with many others, this is the most difficult time to accomplish the desired result.

During the recent outbreak in Texas many different substances were tried with a view of repelling the flies from livestock. Altho some materials gave a measure of protection for a time, none had a lasting effect. In addition to the temporary value of these substances, injury was sometimes produced by their application. Many malodorous mixtures, particularly of an oily nature, have some value, but in preparing these care should be taken that they are not made too strong, particularly when animals are being worked in the hot sun. If they are made too strong they are likely to cause overheating of the animal and produce shedding of the hair.

An Effective Mixture to Repel the Stable Fly

A mixture of fish oil (1 gallon), oil of pine tar (2 ounces), oil of Pennyroyal (2 ounces), and kerosene (7 pints) was found to be very effective in keeping the flies off live stock when applied lightly, but thoroughly, to the portions of animals not covered with blankets or nets.

Proper Care of Straw Stacks the Most Important Step

Since straw stacks have been found to be the principal breeding places of this insect in the grain belt, the proper care of the straw is by far the most important step in control. The straw should be stacked more carefully than is ordinarily done, by making the sides of the stack nearly vertical and rounding it up well on top in order the better to shed the rain.

All straw not required for winter feed should be disposed of immediately by burning or by scattering it over the land soon after threshing and subsequently plowing it under, or by burning the stacks. The plowing under of the straw is the most advisable method of procedure, as by this practice large amounts of humus are added to the soil.

All stacks not consumed by stock during the winter should be promptly disposed of in the early spring. This may be accomplished in the same way as has been suggested for the fall.

Heavy rainfall on freshly threshed straw, produced the unusual outbreak of last year by rendering the straw largely unfit for food for livestock and thus offering breeding places for flies. In such instances their immediate destruction by burning or scattering is necessary to relieve the condition. The work should be done thoroly, and when the stacks are scattered all the straw should be completely exposed to the influence of the elements.

It is best to plow under the scattered straw soon after it has become well dried out. In sections of the country where headers instead of binders are used, the straw is much more easily disposed of. The general adoption of the field threshers would completely solve the question of the straw stack. It is reported that this machine reduces the expense of harvesting from 14 to 2 cents per acre and the straw is left standing in the field. The chaff is scattered over the

ground and the entire refuse turned under at plowing time.

The use of poisons to destroy immature flies is neither practical nor advisable.

Manure Piles Dangerous Breeding Places

Altho straw is the principal breeding place for the stable fly in the grain belt, thousands of them develop in manure piles. The house fly and horn fly also breed extensively here and therefore the greatest care should be used in dealing with this animal refuse.

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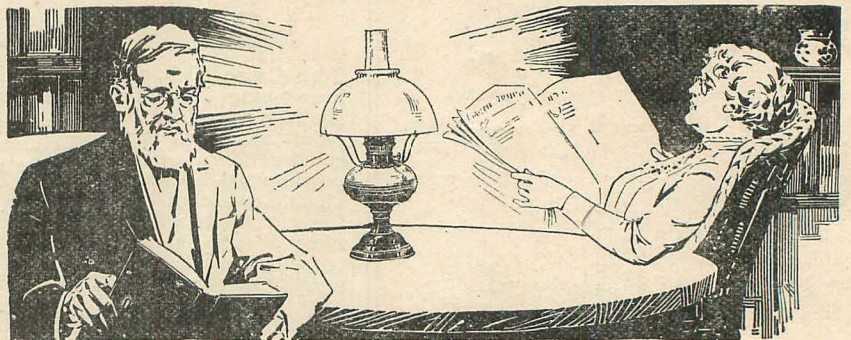
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Manure should be hauled out and scattered at regular intervals and any accumulations of straw or hay, especially adjacent to stables, should be disposed of. Stable manure being usually in close proximity to human habitations, the flies from it have freer access to man to disseminate human diseases.

A photograph and description of an interesting fly trap to capture adult flies is included in the Department of Agriculture's Bulletin.

GOOD COUNTRY ROADS PAY FOR THEMSELVES

The Department of Agriculture Collects Data Showing that Land Values Increase in Actual Value After Road Improvement.

The direct effect that changing bad roads into good roads has upon land value and the general economic welfare of a community is shown in several concrete illustrations gathered by the U. S. Department of Agriculture. The Department has just issued a statement on the subject, based upon a mass of information gathered by the Office of Public Roads, which is making a special study of the economic effect of road improvement in the country. According to data gathered, where good roads replace bad ones, the values of farm lands bordering on the roads increase to such an extent that the cost of road improvement is equalized, if not exceeded. The general land values, as well as farm values, show marked advances, following the improvement of roads.

Among the illustrations cited by the Department are the following:

In Lee County, Virginia, a farmer owned 100 acres between Ben Hur and Jonesville, which he offered to sell for \$1800. In 1908 this road was improved, and, altho the farmer fought the improvement, he has since refused \$3000 for his farm. Along this same road a tract of 188 acres was supposed to have been sold for \$6000. The purchaser refused the contract, however, and the owner threatened to sue him. After the road improvement, and without any improvement upon the land, the same farm was sold to the original purchaser for \$9,000.

In Jackson County, Alabama, the people voted a bond issue of \$250,000 for road improvement and improved 24 per cent of the roads. The census of 1900 gives the value of all farm lands in Jackson County at \$4.90 per acre. The selling value at that time was from \$6 to \$15 per acre. The census of 1910 places the value of all farm lands in Jackson County at \$9.79 per acre, and the selling price is now from \$15 to \$25

per acre. Actual figures of increased value following road improvement are shown.

As the roads in no way affect soil fertility or quality of the farm, advances are due essentially to the decrease in the cost of hauling produce to market or shipping point. Farms are now regarded as plants for the business of farming, and any reduction in their profits thru unnecessarily heavy costs for hauling on bad roads naturally reduces their capitalization values. With reduced costs for hauling, profits are increased; with the result that the farm plant shows satisfactory earnings on a higher capital value.

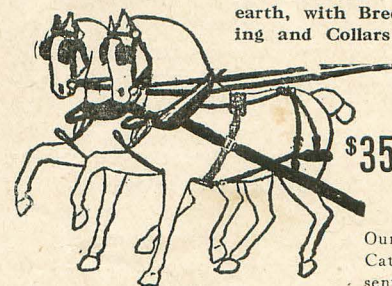
The automobile also has begun to be an important factor in increasing rural values where good roads are introduced.

Immigration is particularly marked where road conditions are favorable;

in fact, the figures of the Department seem to indicate, that good roads indirectly increase the demand for rural property; and the price of farm land, like that of any commodity, is ruled by the relations between demand and supply.

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When silos are ordered without additional lumber to make a full car, we can usually arrange to get you carload rates. Write for special offer to one farmer in each township.

From the Nation's Capital

By Guy E. Mitchell

WOULD HONOR GRANGE FOUNDER

Much favorable comment has been heard among officials of the Department of Agriculture of the proposal agitated by Fredonia Grange, No. 1, of New York, of the National Grange, or Patrons of Husbandry, to erect in Washington, possibly in the Capitol grounds, a memorial to the late Oliver H. Kelley, founder of the order.

It is proposed that the monument shall be paid for by appropriations from each of the granges belonging to the order in size according to the membership of the grange. It is also proposed that at the next meeting of the National Grange a committee be appointed to decide upon the amount to be expended for the memorial, and apportion the total expense among the various granges of the order.

In an editorial in the National Grange Monthly, appears the following:

"The project will command instant attention and interest, and is a very timely subject for grange discussion from now on. While opinions may differ as to what form such a memorial might best take, it is doubtful if any patron will feel otherwise than that some form of memorial to 'Father' Kelley is both proper and deserved. Nor is there any doubt of the ability of patrons of this country, now numbered well toward the million mark, to carry thru almost any undertaking of this sort which they may finally decide upon.

"The first issue is this. Shall the grange of the country undertake to set up some fitting memorial at this time, not merely to 'Father' Kelley, but expressing as truly and in a broader sense its gratitude to all the noble founders of the order, and to no less a degree typifying a renewed and continued consecration to the promotion of grange ideals and possibilities? What say the patrons of the country on this very timely question?"

NO MORE LOOSE MONEY COLLECTION FROM BOXES

The Post Office Department has just issued an order warning patrons of rural routes against leaving money in the boxes. Hereafter coins must be tied in bundles or inclosed in envelopes whenever the patron of a rural route wants stamps from a carrier and leaves the necessary amount in the wayside box.

"The attention of postmasters at rural delivery offices and of rural carriers," said Fourth Assistant Postmaster General Blakslee "is again directed to the fact that rural carriers are not required to collect loose coins from rural mail boxes. Patrons must inclose coins in an envelope, wrap them securely in paper, or deposit them in a coin-holding receptacle so they can be easily and quickly taken from boxes, and carriers will be required to lift such coins, and when ac-

companied by mail for dispatch, attach the requisite stamps."

TO GIVE FARMERS CROP NEWS BY TELEGRAPH

In order to give to the farmer immediate news of detailed crop conditions in his own state, as reported by the Government, the Department of Agriculture about the middle of September commenced a test experiment with a new system of circulating crop information by telegraph. The detailed statement giving information by states had previously been furnished to the farmers of the several localities in printed form and only by mail. As a



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You can set him to do it as you choose, and *shut him off short* in the middle of his call either way.

That makes him *two good clocks in one*, to suit everybody's taste in early rising.

He plays no pranks. He won't go off before it's time and rob you of your full measure of sleep. He won't go off behind time and rob you of your work time. It's Big Ben's business to run on time, to ring on time and to stay on time.

Big Ben attends to his own business and helps you attend to yours by getting you and the farm hands out early.

Then he sticks around the house

and keeps time all day for the women folks so they can have your meals on time.

There never was a clock that fitted in better with the farm work.

He's triple-nickel plated and so handsome you'll want to keep him in the parlor instead of a bedroom. Stands seven inches tall from the top of his head to the tips of his toes; has big, easy-winding keys, large hands, and big figures that you can read at a distance on dark mornings, and is built of good implement steel so he'll last for years. He's doing this kind of work in 3,000,000 American homes today.

Twenty thousand jewelers sell him—one in your neighborhood, probably. If yours doesn't, just send a money order for \$2.50 addressed to *Westclox, La Salle, Illinois*, and he'll come to the front door, if the parcel post does, charges prepaid.

result, it took from seven to ten days for this information to reach the farmers in distant states thru the post offices.

The Department made this test first in six states: Illinois, Missouri, Minnesota, Iowa, Kansas and Texas. The Government crop news for each of these states will be telegraphed to a central point in that state. There the information will be quickly re-produced and mailed to all the newspapers in the state. In this way every paper, not merely the large dailies, but the county seat and small town papers, even in the most distant states, should be in possession of this information within from 12 to 18 hours after it is issued. As far as possible the information will be sent out so as to reach the small weeklies in time for use in their Thursday and Friday editions.

This new service has been effected thru a co-operative arrangement between the Bureau of Statistics and the Weather Bureau officials. In each state the Weather Bureau has a man provided with modern facilities which will enable him to print and mail the telegraphed facts to every newspaper within a few hours. The printed matter thus circulated will give these newspapers: (a) a full list of the crops; (b) the average condition of each crop for ten-year periods in that particular state; (c) the condition of the state crops for the 9th of the month. In the adjoining column will be given the same data for the United States, so that the farmers who read these notices can compare the crops in their state of the 9th of the month with the ten-year averages of their own state, and, in the same way with the average condition thruout the United States on the 9th and for ten years.

These data are to be supplied for the reason that the condition of crops actually within a state has more effect on prices within that state than the conditions for the country at large.

The cost of this service, it is found, will be only nominal. All that will be necessary will be to telegraph the figures for two columns, and this can be done at a cost of not more than 75 cents for each state.

If the contemplated experiment is a success and the newspapers co-operate by publishing this special service information, the plan will be extended eventually to serve the farmers of all the states.

GOVERNMENT'S MILK POLICY

The Department of Agriculture has issued the following statement outlining its policy in dealing with the milk situation in the United States:

"It is erroneously supposed that the Department of Agriculture has established absolute standards and bacterial counts to which all milk coming under its jurisdiction in interstate commerce must comply. The Department has established no absolute standards. It certainly has not and will not establish any rule declaring that milk containing less than a certain number of bacteria per cubic centimeter is good milk. Under such a standard, milk containing less than a certain number of typhoid or tubercle bacilli would automatically be passed, as coming up to standard. A simple count of the bacteria is not in itself sufficient to determine absolutely its safety. The nature of the bacteria as well as their number also must if possible be considered. The presence of only a few disease producing bacteria might make the milk dangerous, while several thousand harmless bacteria could be present without necessarily indicating that the milk was unsafe.

The presence of even a few colon bacilli is presumptive evidence that cow manure has been allowed to get into the milk between the cow and the consumer. Similarly, a high count of the kinds of bacteria that normally

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are present in milk indicates that the milk is dirty, or that it has not been held at low temperature or that it is old.

"The Department in its milk activities is carrying on an extensive campaign of education to help dairy-men produce and market good clean milk. This work is carried on principally by the Dairy Division of the Bureau of Animal Industry. This Division exercises no policing function. It has no power under the law to seize milk or to prosecute milk dealers. Its work is purely educational. This division issues many educational bulletins based upon its experiments in the economical production of clean milk. It supplies farmers with these bulletins and also sends men into the field to show milk producers how to make changes within their means which will raise the quality of their milk.

FREE WOOL AND FREE SUGAR

Free wool and free sugar are now accomplished facts. Both have at last been written into the new tariff law. Claiming that wool is essentially a by-product of mutton growing and that only under such exceptional conditions as exist in Argentina or Australia can sheep be raised for their wool alone, and the receipts from mutton disregarded, the Washington Times flatly asserts that free wool will ultimately prove a benefit to the wool grower, that is to the sheep raiser. There may have been a time in this country when conditions would have allowed profitable sheep husbandry for wool alone but it is certain, the Times states, that that time is passed for either many Merino and other sheep raisers in the Middle West and many wool flocks in the far West, who lose money every year for their owners, and no tariff however high could make them profitable. On the other hand, where the flockmasters and farmers have adopted the mutton type of sheep, thereby supplementing their receipts from wool by receipts from mutton, they need no tariff. They can prosper without a tariff in the same way that the 30,000,000 odd sheep and lambs in free trade United

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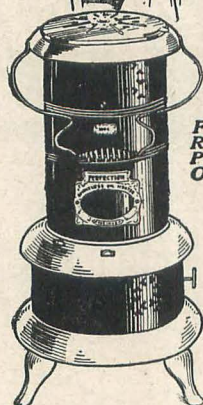
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FARGO, NORTH DAKOTA

Kingdom make money for their owners now. Of course there will be money lost, but a readjustment will bring about a better condition than the present one.

Free sugar, on the other hand, presents a very different outlook. Senator Lodge and Senators Bristow, Sutherland and other Senators from beet sugar states made final pleas in the Senate against free sugar, stating that it would spell the ruin of the 750,000 ton a year beet sugar industry of the United States. Viewed from another standpoint free sugar would seem unquestionably to be the beginning of the destruction of the cane and beet sugar industries in the United States and the weakening of the sugar industry in Hawaii and Porto Rico. There is no readjustment that the domestic sugar industry can make that will assure its existence against tropical competition. Sugar can be produced at least one cent a pound cheaper in Cuba than in the United States. At present Cuba does not produce enough to capture the entire American market; but free sugar will stimulate Cuba's production, and as fast as it increases the domestic industry will decline. It is in agricultural cost of sugar-raising that the American is at a disadvantage. He cannot compete against the natural productiveness of the tropics, and Cuba has enough possible sugar land to supply the world.

NEEDLESS FARM DRUDGERY

In the opinion of President Joe Cook, of the Mississippi Normal College, the first step in the education of women of the country should be the elimination of needless farm drudgery. No matter how good the rural school may be, he declares, it can not help permanently in making life in the country attractive unless there goes with it the movement to lighten the labor of women on the farm. The water supply, he says, is the cause of nine-tenths of the drudgery of women on the farm.

"The getting of the water from the source of supply to the point of application requires more manual labor than any other item of housekeeping. The water for the kitchen has to be lifted from the well, carried to the kitchen, poured into a kettle, poured out of the kettle into the dishpan, and from the dishpan out of doors. This makes six times the water is handled; and a bucket of water containing two gallons, with the containing vessel, will weigh 20 pounds. When this is handled six times, the total lifting is

120 pounds. The cooking of three meals a day on a meager allowance of water will necessitate 10 buckets, which will make for cooking alone 1,200 pounds of lifting per day. When to this is added the water necessary for bathing, scrubbing, and the weekly wash, it will easily bring the lift per day up to a ton; and the lifting of a ton a day will take the elasticity out of a woman's step, the bloom out of her cheek, and the enjoyment from her soul."

To eliminate this item of drudgery is easy, he claims. All that is necessary is for the farmer to realize that the farm is also the heir to modern invention: "An isolated farm can be supplied with a system of waterworks for an outlay of about \$250—pump, \$25; gasoline engine, \$40; tank, \$20; bathtub, \$20; commode, \$20; kitchen sink, \$4; basin, \$4; 550 feet of pipe, \$40; valves and installation, \$75. These figures are for first-class por-

celain-lined fixtures; cheaper fixtures can be had. Such a system if intelligently and compactly planned, will not only supply all of the household needs, but will supply practically all the farm needs besides."

Farm Data Wanted by Japan

Secretary Houston of the Department of Agriculture had as one of his callers the noted R. Shoji, professor of agriculture in the Imperial University at Tokyo, who was seeking agricultural information for Japan. Professor Shoji, who presented a letter of introduction from Viscount Chinda, the Japanese Ambassador, is planning a tour of the country, studying special crops and plant breeding, particularly tobacco cultivation, cotton standardization, and foreign seed and plant introduction methods. He was given a note of introduction to the department's various experts, who were instructed to explain to him their special work.



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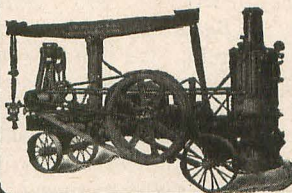
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North Dakota Farmer

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Vol. 15 OCTOBER, 1913 No. 4

A most striking feature of the Casselton Corn Festival was an exhibit of white dent corn. This exhibit and some of the Eastern seed corn from which the exhibit had been bred were placed side by side. The improvement was very marked and spoke well for King Corn in North Dakota.

Eighteen or twenty bushels of wheat per acre seems to be sufficiently gratifying to the average farmer to cause its publication in the newspapers. However, on lands farmed a thousand years in the agricultural sections of the old world, wheat yields practically double this amount. With our virgin soil, therefore, twenty bushels per acre of wheat should be considered evidence of poor farming methods. Will the time come when we shall boast as loudly of a ten-bushel crop?

Farmers are just beginning to learn, in some localities, that without organization for co-operative buying and selling they are cutting the margin of their profits to the minimum. Many localities, however, still produce, produce. They take for their products what is offered and pay the price demanded for whatever they require for domestic needs and imagine that farming is an independent business. That it is not a fairly independent business is the fault of farmers themselves. Organization should be the watchword until every farming community exercises material weight on both the buying and selling ends of its business.

Weeds are among the worst enemies that the state has to contend against. The actual loss in dollars and cents caused by weeds is about \$25,000,000 annually. This is no

guess. Half the trouble about drouth is caused by weeds stealing moisture that the grain should have. A half crop or total failure results. The farmer says drouth. He should say weeds. A general onslaught against weeds, therefore, would result in great pecuniary advantage to farmers. To prove effective, however, the movement against weeds must be all along the line. For one farmer to clean his land will avail but little if his neighbor allows weeds to grow and fill the whole neighborhood with the pesky seeds they produce.

Schools teaching only the old traditional subjects,—preparing only a few studiously inclined pupils for college and offering little or no vocational education for those not destined for some higher institution of learning, are strictly behind the times. The tax payers are demanding, and properly too, that the education they pay for shall be for the benefit of all the children and not for the few, and further, that the training shall fit the pupils for positions that are actual rather than for positions that are ideal. We have been making presidents already too long; now let us make citizens. The world's work must be done. From this there can be no escape. The schools must facilitate the doing of the world's work, not vulgarize it.

After twenty years of faithful service, filling the double position of president of the North Dakota Agricultural College and Director of the Government Experiment Station connected with the Agricultural College, President Worst resigned the Directorship, which was accepted at the Board meeting held at the college, October 16. It has been a number of years since a single American state did not provide both president and director for its Agricultural College. The merging of the Better Farming Association with the Experiment Station activities made it necessary to divide the work; and hence President Worst's resignation.

Thomas Cooper, Secretary of the Better Farming Association, was elected to the Directorship and will assume the duties of his office January 1, 1914. Mr. Cooper is exceptionally well-qualified for this position, and, being a comparatively young man, will have opportunity to render efficient service for many years.

It is certainly very desirable for a farmer to become a business man but the schools have not offered him any preparation for a business career or business standing. Compelled to be a business man without any preparation for it has led to conditions unsatis-

factory in this, that others have taken advantage of the situation and are transacting his business for him.

RENEWED INTEREST IN SCHOOL

Those who are in a position to know, report a marked change in the farmer boy. But a short time ago he dragged unwilling feet to the school in the morning and could hardly keep up with his speeding feet when school was dismissed at night.

Since the introduction of elementary agriculture into the state course of study, that same boy, if favored with a progressive teacher, is now enthusiastic in his study of weed seeds, seed selection, in corn contests, the raising of poultry and the judging of livestock.

Nevertheless this same boy, who found the grammar so dry, the geography so uninteresting, and the school-room so distasteful, now is correlating those uninviting studies with his research work, and—the boy is saved from the army of the unemployed.

We have decided to devote several pages each month to the work in elementary agriculture as outlined in the state course of study, and may this feature be the means of welding together the interests of the home and the school, and may it stimulate parent as well as child to the scientific study and practice of agriculture.

OFFICE OF SUPERINTENDENT OF SCHOOLS

Divide County, North Dakota

J. H. Phelps, Superintendent

Crosby, North Dakota,
October 15, 1913.

North Dakota Farmer,
Lisbon, N. D.

Dear Sirs:

I notice some excellent articles on agriculture in your September number. These articles are of much value when used in the schools. I should like to know if it is the intention of the management to run similar articles thruout the year? If so I should like to have this brought to the attention of my teachers and some of the interested School Boards. If you would like to send me a package of sample copies I shall see that they are sent to the teacher who would be the most apt to subscribe.

Very truly yours,

P. H. PHELPS

My Dear Supt. Phelps:

You may be sure of just such help for the young men and women on the farm. The work in Elementary Agriculture, as outlined in the Course of Study will be elaborated each month for the succeeding month. If we can aid you, command us—*Publisher.*

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DR. PRICE'S
JELLY

DESSERT
NUTRITIOUS-WHOLE SOME

One package, 10 cents, makes one pint of wholesome Fruit Jelly. All flavors from true fruits.

The Purest of Pure Food Products

are packed under the Brands of

Nokomis
PURE FOODS

Howatha
PURE FOODS

Blue Bird
PURE FOODS

Wampum
PURE FOODS

Stone-Ordean-Wells Company
DULUTH, MINN.

BRANCH HOUSES—Minot, Bismarck, N. D. Billings, Bozeman,
Butte, Great Falls, Mont.

MONARCH BRAND



FOOD PRODUCTS

A GUARANTY OF PURITY. A WELCOME GUEST at every table where the HOUSEWIFE demands the BEST. THE MONARCH LABEL insures QUALITY in Coffee, Catsup, Pickles, Maple Syrup, Canned Goods or any article bearing the MONARCH BRAND of REID MURDOCH & CO CHICAGO.

ANOTHER PURE FOOD PRODUCT

CEREKOTA

Self-Rising

Pancake Flour

Is a Scientific Preparation of Healthful Appetizing Ingredients and the Best Flour Milled in North Dakota

GUARANTEED Pure and Wholesome

Ask Your Grocer for a Trial Package

Bemmels Milling Company

Sole Manufacturers

Lisbon,

North Dakota

Livestock Department

FARM AND STOCK NOTES

N. J. Shepherd

Too heavy pulling often bends the knees of a horse.

The law of the farmers' success is in good management.

As a rule it is the quickly turned penny that pays the profit.

Piles of brush and stubble afford a harboring place for insect pests.

A low-spreading tree is less affected by the wind and will grow better.

By constantly selecting the best, the herd is bound to increase in value.

A hen and a cow must be fed liberally if eggs and milk are desired.

Any habits acquired when young are apt to cling to the cows when old.

It is a mistake to undertake to do so much that nothing can be done thoroly.

The sheep that makes the best mutton carcass is apt to have the best fleece.

To make feeding most profitable feed to get growth and flesh at the same time.

If the best flow of milk is desired, give the cows the most perfect rest and quiet.

No other domestic animal will reproduce itself so quickly nor in such great numbers as the hog.

The pig that is fed enough to keep it growing steadily from start to finish is usually a profitable animal.

Keep the pigs in a good condition while growing and it will be easier to fatten for market when ready.

A sow must be strong and full of vitality at the time of service in order to produce a large vigorous litter.

Th equality of milk a cow yields is born with her, the quantity, however, is influenced by her feed and care.

If a cow makes money for her owner she is a good cow; how good depends on how much money she makes.

Complete egg foods are those which contain lime for the shell, albumen for the white and carbon for the yolk.

If intending to develop a heifer into a profitable dairy cow; let her care and training be in that direction from the very start.

Mixed feeds are a good thing if bought at prices based on their feeding value and at prices that are reasonable as compared with whole grain feeds.

Butter from properly kept and ripened cream will have a more desirable flavor; it will keep sweet longer and bring a higher price.

If the sows are bred in December the pigs will come just about right in the spring to go on and make a good growth.

Skim milk is of value in stock-feeding, but never at its best when fed alone. The best plan is to use in connection with bran or meal.

Good draft horses do not fluctuate much in value and one can calculate with some degree of certainty upon the outcome when breeding them.

Overfeeding and underfeeding, both lead to the same end—a reduction of the profits underfeeding stunts growth and overfeeding is a waste of food and time.

In selecting a male bird for breeding take one that is bold and lively in disposition, glossy in plumage, born well developed, broad, full breast, muscular thighs, legs set well apart.

Experience is one of the best teachers in the world upon the farm as elsewhere. Occasionally the lessons come high and for that reason it is a good plan to take advantage, as much as possible, of the experience of others.

CLASSIFIED ADS.

One Cent a Word

Small advertisements will be classified under appropriate headings at the low price of one cent a word for each insertion. Cash must accompany all orders. Each initial or number must count as one word. TRY IT HERE.

LIVE STOCK

FOR SALE

GALLOWAY CATTLE

J. W. & F. T. PETERSON, Litchfield, Minn

POLAND CHINA PIGS, also Shropshire sheep. Seed grain. GEO. N. SMITH, Amenla, N. D.

FAMOUS O. S. C. SWINE. Am now booking orders for fine pigs of April farrow. Price: \$18 each; \$35 a pair. All Stock recorded free. Shipping point: Mankato.

ROBT. A. HAEDT, Eagle Lake, Minn.

ASH GROVE FARM—Knudtson & Son, Props. Breeders of Pure Bred Percheron Horses and Short Horn Cattle, Both Sexes. Stock for Sale. Route 1 Fullerton, N. D.

J. S. BIXBY

RED POLL CATTLE. If you want dual-purpose cattle, I have the best. Rhode Island Reds, also in stock. LISBON NORTH DAKOTA

FOR SALE. Work Horses, Drivers, Stallions and Double-standard Polled Durham Bulls. LEAL STOCK FARM Leal, N. D.



Purebred Registered

HOLSTEIN CATTLE

The Greatest Dairy Breed

Send for FREE Illustrated Book

Holstein-Friesian Asso., Box 135 Brattleboro, Vt.

ENVILLA STOCK FARM

Envilla Stock Farm, Cogswell, N. D. will quote you special prices on Angus Cattle, Shetland Ponies, Duroc Jersey Hogs, Wolf Hounds, Collies, Rat Dogs and other breeds, Angora Cats. All varieties of chickens; turkeys, geese, ducks, guineas, pheasants, rabbits, ferrets. Pets. Live Foxes, Skunks, Mink and Badgers.

MISCELLANEOUS

WANTED! To hear from owner who has good farm for sale. Send description and price. Northwestern Business Agency, Minneapolis, Minn.

FOR SALE

One of the best 640-acre stock ranches in the state of Montana. Close into town. First-class farming lands near town. All under irrigation. Price \$15 to \$30 per acre. Write to

F. R. KRAMER & CO.

Malta, : : : : Montana

WANTED. Live Foxes, Skunks. Mink and Badgers, any time. Envilla Stock Farm, - - Cogswell, N. D.

WANTED: A Newfoundland male pup. ALBERT JAQUA. Tokio, N. D.

AGENTS WANTED. Farmer's Directory, Account Book. Exclusive home territory. Easy seller. Big inducements. Particulars Free. Write Naylor 938 Ft. Wayne, Ind.

HALF SECTION FARM, Burke County, North Dakota—House 24x34, basement barn 30x50, addition 16x40, granary 10x12; well of fine water; 225 acres under cultivation; 60 acres fenced; fine hay meadow which cuts about 100 tons a year; three miles from market. A snap at \$24 per acre. Would take in a good automobile, or some good income property, but must have \$1,000 cash. H. L. Lyon, - - - - - Bowbells, N. D.

HOUSEKEEPER WANTED. One to go into partnership in raising poultry three miles from town at my home. Am 50 years old and have one grown son. The right one will be wanted for keeps. Lock Box 324 - - - Dickinson, N. D.

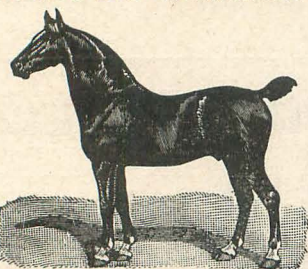
WANTED! 200 GAS TRACTOR MEN

To become experts through the Y. M. C. A. Gas Tractor and Auto School, Fargo, N. D. Three and six months' courses. School opens Oct. 15. Address Ralph R. Wolf, Gen'l Sec.

Twenty Acres, Irrigated, Part-bearing Orchard. 1000 boxes this year. I am the owner and must sell in 30 days. Write me for particulars. Photo W. H. ELLIS Coenid Alene, Idaho.

Warranted to Give Satisfaction.

Gombault's Caustic Balsam



Has Imitators But No Competitors.

A Safe, Speedy and Positive Cure for Curb, Splint, Sweeney, Capped Hock, Strained Tendons, Founder, Wind Puffs, and all lameness from Spavin, Ringbone and other bony tumors. Cures all skin diseases or Parasites, Thrush, Diphtheria. Removes all Bunches from Horses or Cattle.

As a Human Remedy for Rheumatism, Sprains, Sore Throat, etc., it is invaluable. Every bottle of Caustic Balsam sold is Warranted to give satisfaction. Price \$1.50 per bottle. Sold by druggists, or sent by express, charges paid, with full directions for its use. Send for descriptive circulars, testimonials, etc. Address

The Lawrence-Williams Co., Cleveland, O.

BARN FLOORS

R. M. Dolve, Prof. Agr'l Engineering, N. D. Agr. College

The problem of providing a suitable floor for barns that is low in first cost, yet durable and sanitary is an important one. Cement concrete, altho somewhat higher in first cost than wood, meets the requirements of a good floor better than any other available material and the writer does not hesitate to recommend concrete floors for all types of barns. Concrete floors are considered best for several reasons. 1. They are economical because they are durable. Wooden floors last from three to five years with a maximum of about ten years, if of the best construction, while the durability of good concrete floors equals that of the building. 2. They save labor because of their evenness which permits of thorough and easy cleaning. 3. They are sanitary and not only because they can be kept clean, but because they are easily drained and are water tight enough to exclude ground water and prevent the liquid from leaching into and polluting the soil.

AYRSHIRE CATTLE

G. L. Martin, Prof. of Dairying, N. D. A. C.

The Ayrshire cattle originated in the County of Ayr, which lies in the Southwestern part of Scotland. Their origin is somewhat obscure but the records date back over 150 years. This breed carries a mixture of blood from several races of cattle on the continent, but for the last 100 years they have been bred pure.

The conditions under which the breed developed were rather severe. The country lies close to the sea, rising to rugged hills covered with heather on which the cattle pasture. The climate is raw and severe at times, with much rainfall and snow. The soil supports good pasture and is well adapted to growing root crops which furnish ample winter food for the stock. Under these conditions the Ayrshire cattle have developed rugged constitutions with strong tendencies to readily adapt themselves to local conditions.

In the early development of the breed some attention was given to the beef making tendencies; however the milking tendencies have always predominated. In appearance the mature Ayrshire cow is smooth, well-filled out, of a good dairy form, and presents a very attractive figure. They average about 1000 in weight, while the bulls often attain 2000 pounds. The color ranges from spot-

ted red or brown and white to nearly a white color. The outstanding characteristic of the breed is the horns. They are rather long, curve outward and upward, presenting a very proud appearance.

The breed is noted for the ideal udder development. The early Scotch breeders preferred an udder attached high behind, extending far forwards, flat and even with the under line of the body, the teats regularly placed and uniform in size. The short teats so common in the early development of the breed have been overcome in the American bred cows.

The Ayrshires are noted for a good uniform production of milk, testing on an average a little less than 4%, with a high percentage of other solids. They are well adapted to production of market milk. In beef production they rank high as a dairy breed, when dry fatten readily. They are a vigorous animal capable of utilizing an abundance of roughage and well adapted to our conditions in the Northwest.

THE GOVERNMENT WANTS DAIRYMEN

The establishment of creameries on several irrigation projects of the Gov-

Pedigreed Stock

**PEDIGREED POLAND CHINA
HOGS & SHORT HORN
CATTLE FOR SALE. NOW
BOOKING ORDERS FOR
SPRING PIGS OF THE
BEST KNOWN BREEDING**

WHITE DENT SEED CORN FOR SALE

Booking orders for Barred Plymouth Rock Eggs & Mammoth Bronze Turkeys

**Stock for Sale at all times. Pedigree
Furnished. Write your wants to**

**C. H. SCHUTT
R. R. 1, Fairmount, N. Dak.**

ST. PAUL UNION STOCKYARDS COMPANY, SOUTH ST. PAUL, MINN.

Comparison of Receipts and Shipments of Livestock for September, 1913.

	Receipts						Total Cars
	Railroads	Cattle	Calves	H9gs	Sheep	Horses	
C. R. I. & P...	142	160	542	616	12	23	
C. G. W.....	1159	362	2956	1316	192	114	
C. M. & St. P.	6692	730	12786	12821	79	526	
M. & St. L....	1508	244	11848	1130	46	241	
C., St. P., M. & O.	3785	962	15806	3939	65	419	
C. B. & Q. ...	817	119	403	865	12	40	
M.St.P.&S.S.M.	11563	2583	5799	6015	13	580	
Gt. Nor.....	12062	2910	13701	60128	29	1035	
Nor. Pac.....	16201	2056	4927	19813	67	792	
St. P. B. & T..	.....	.....	.....	.....	.....	.....	
Driven In....	449	96	531	321	18	.....	
Total.....	54378	10212	69299	106964	533	3770	
Increase.....	.....	.....	34361	5654	.....	403	
Increase.....	5925	1501	.....	.....	24	..	
Jan. 1 to date.	264763	91162	817965	310952	4176	24628	
Inc. over 1912	7013	.....	116651	.....	.....	2762	
Decrease.....	.....	11765	.....	1610	584	.....	

	Shipments						Total Cars
	Railroads	Cattle	Calves	H9gs	Sheep	Horses	
C. R. I. & P...	3795	1	.....	3341	.....	130	
C. G. W.....	4848	316	.....	5116	5	173	
C. M. & St. P.	12356	408	8295	16246	55	591	
M. & St. L....	2610	26	.....	705	.....	82	
C., St. P., M. & O.	8056	208	478	21009	126	368	
C. B. & Q. ...	1600	27	5391	20928	43	206	
M.St.P.&S.S.M.	2888	206	331	6120	25	119	
Gt. Nor.....	2545	34	.....	1864	155	95	
Nor. Pac.....	2050	99	116	1732	52	78	
St. P. B. & T..	.....	.....	.....	.....	.....	.....	
Driven Out...	673	170	163	352	31	.....	
Total.....	41421	1495	14774	77413	482	1842	
Inc. over 1912	.....	.....	5073	4869	.....	.....	
Decrease.....	3043	1241	.....	.....	1	103	
Jan. 1 to date.	184715	19381	187553	216168	2611	8953	
Inc. over 1912	17359	2132	20263	15541	.....	836	
Decrease.....	.....	.....	.....	.....	1997	.....	

ernment during the past two years has proven so successful that there is widespread interest in dairying among the settlers. Unfortunately many of the settlers are without the necessary capital to purchase good dairy stock and for the time being are forced to continue the uneconomic method of selling all their forage crops. A large number of these settlers are trying to operate more land than their means will warrant, and with a view of engaging in dairying are desirous of subdividing their farms in order to get money for the purchase of stock. This has placed on the market a considerable area of land on several projects where nearly all of the Government land has been taken up. The prices and terms offered are more on the basis of the need for money than on actual value, and offer excellent opportunities for experienced dairymen to establish themselves in communities where the success of their enterprise is practically assured. There are numerous sections where good land suited for dairy farming can be had at prices ranging from \$25 to \$50 per acre, with water ready for irrigation. On all these projects the markets for dairy products, beef and pork, are excellent, and there is every indication of a continuance for an indefinite period. It has been demonstrated repeatedly that dairy farming in the West is the safest, surest, and in the long run the most profitable form of agriculture to engage in.

The Reclamation Service at Washington is furnishing information concerning location, prices, and terms, to all who are seeking homes in the West, but is especially desirous of interesting practical farmers with capital. Many of these projects contain a few Government farms available for homesteading, and literature describing them is also supplied. In view of the very high prices prevailing elsewhere for lands suitable for dairying, the western opportunities are regarded as exceedingly attractive.

CLOSER CO-OPERATION RECOMMENDED

At the first annual convention of the Northwestern Association of Dairy Officials (Includes all states west of Michigan and Illinois) in Bismarck, N. D., the visiting dairymen commended very highly the efforts of the bankers and business men of the northwestern states in placing dairy stock in their respective communities and otherwise interesting themselves in the dairy industry. But they recommended greater discretion in the selection, buying and placing of such dairy stock and as a general proposition, they considered it better for the

farmers to grow into dairying rather than to go into dairying.

They were quite generally agreed that poor management is responsible for lack of success of many creameries and urged the importance of employing only trained and competent men as creamery managers and buttermakers.

The keynote of the convention was closer co-operation between the states for more and better dairying and a concerted action in helping to boost the dairy industry to a higher level. Officers for ensuing year: C. Larson, Brookings, S. D., Pres.; G. H. Benkendorf, Madison, Wis., V. Pres.; J. H. Wallis, Boise, Idaho, Sec. and Treasurer.

DAIRY PRODUCTS FOUND TO BE ADULTERATED AND FINES ARE IMPOSED

Recent Notices of Judgment issued by WILLOBANK FARM, LARIMORE, N. D.

the U. S. Department of Agriculture, concerning cases arising under the Food and Drugs Act, state that the following fines have been imposed on shippers of adulterated dairy products:

Cream. Harry B. Witter was fined \$25, for the shipment from Frederick, Md., into the District of Columbia of a quantity of cream which was charged to

IF YOU WANT

ANGUS CATTLE
OXFORD DOWN RAMS
EMBDEN GEESE
WHITE
HOLLAND TURKEYS
BLACK RABBITS

GET OUR EXPRESS-PAID PRICES

W. F. JACOBS Livestock Auctioneer

Thoroughly Posted on Pedigress

Terms Reasonable LISBON, N. D. Write for dates

ST. PAUL UNION STOCKYARDS COMPANY, SOUTH ST. PAUL, MINN.

Comparison of the Origin and Disposition of Livestock for September, 1913

		Origin of Livestock Received					
Minnesota...	21677	6895	57011	19736	67	1861	
Wisconsin....	5500	1556	4137	6005	.....	330	
Iowa.....	87	71	175	.....	112	16	
Far South....	664	115	.....	.....	166	27	
So. Dakota...	4286	218	2682	2914	96	228	
No. Dakota...	15598	1050	5294	9642	65	725	
Montana....	6489	307	.....	64365	27	564	
Far West....	.....	.....	.....	4302	.....	17	
Manitoba & NWT....	.....	.....	.....	.....	.....	.....	
Far East....	77	.....	.....	.....	.....	2	
Returned....	.....	.....	.....	.....	.....	.....	
Totals.....	54378	10212	69299	106964	533	3770	
		Disposition of Livestock					
So. St. Paul P'k'rs	15143	5389	53681	25307	.....	.....	
Cy. & St. Butch.	736	160	182	67	.....	26	
Outside Packers.	169	20	13515	3733	.....	153	
Minnesota...	13854	496	420	20951	288	556	
Wisconsin....	3713	10	331	9441	103	164	
Iowa.....	8864	187	.....	6746	23	295	
Nebraska....	23	3	.....	.....	.....	1	
Kans. & Mo. ....	.....	.....	.....	.....	.....	.....	
So. Dakota...	1449	97	.....	81	.....	40	
No. Dakota...	2154	117	.....	1086	10	64	
Mont. & West	1681	204	.....	.....	5	45	
Far South....	127	.....	.....	.....	.....	4	
Manitoba & NWT....	.....	.....	.....	113	.....	5	
Mich. & E. Can.	60	1	.....	.....	2	5	
Chicago.....	5240	82	326	33215	.....	359	
Ills. (ex. Chicago)	2842	118	.....	980	31	111	
Eastern Points..	476	.....	.....	.....	20	13	
Returned....	33	.....	.....	.....	.....	1	
Totals.....	41421	1495	14774	77413	482	1842	

be adulterated in that butterfat, one of its valuable constituents, had been abstracted wholly or in part from it.

Harry Fouche was fined \$15 for the shipment from Araby, Md., into the District of Columbia of cream which was alleged to be adulterated in the same manner.

Other fines were imposed on shippers of cream adjudged to be adulterated, as follows:

\$15 on the United Dairy Co., of Barnsville, Ohio, for shipment of cream from Ohio to the District of Columbia;

Two of \$10 each on Carter Kelly, of Leesburg, Va., for shipment of cream from Virginia into the District of Columbia;

\$10 on William Edward Howe, Washington Grove, Md., for shipment of cream from Maryland into the District of Columbia;

\$10 on Curtis E. Burdette, Araby, Md., for shipment of cream from Maryland into the District of Columbia.

Cheese. A fine of \$20 was imposed on Henry B. Terrett, Washington, D. C., for the sale of a quantity of cheese which was adjudged to be adulterated and misbranded. Adulteration was alleged because butterfat had been left out and abstracted in whole or in part. Misbranding was alleged because the product was an imitation of and sold under the name of cheese.

Milk. A fine of \$10 was imposed on William D. N. Zimmerman, Adamstown, Md., who pleaded guilty to an information charging the shipment into the District of Columbia of a quantity of milk adulterated by an addition of water.

A QUERY

I would like to ask information thru the North Dakota Farmer what would be the proper thing to do for horses having hard bunches or sort of boils that break out under the collar, on shoulders and, more especially, on top of neck.

I have a span of five- and six-year old horses troubled in this way and they have been bothered more or less since three- or four-year olds. Have used four boxes Bickmon Gall Cure, which helped immensely to keep neck in any shape. I thought as soon as cool weather came there would be no more trouble. They seem to be doing well otherwise, but I think blood is out of order. The man I bought them of was always dopping his young colts to ward off colt diseases, and these colts had distemper good and plenty after I got them. Would prefer answer by letter from your veterinary, if it is reasonable to ask it.

G. O. Pitcher Cleveland, N. D.
(This letter was referred to the A. C. to which Dr. L. Van Es makes reply.

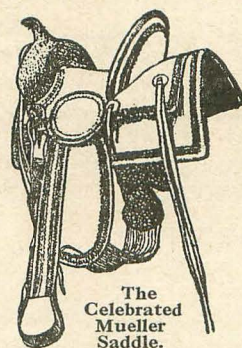
In reference to the enclosed inquiries, I beg to say that in my opinion the condition of which the correspondent complains is that known as furunculosis, which is due to a specific infection of pus producing germs, and which are usually kept in operation by means of infected harness, collars, etc.

The proper treatment to give cases of that kind is to open the little boils, remove all of the pus thoroly, and daily wash the surroundings with a two per cent solution of creolin in warm soft water. While this is being done, all pieces of harness and collars coming in contact with the infected skin should be cleansed and likewise disinfected. It should be done quite frequently, at least in the beginning.

We do not believe there is any advantage to be gained by the use of condition powders or the like.

How strange that epicures who delight in the white-skinned turkey or duck, should be so set against the white-skinned chicken. But it seems nothing will overrule this prejudice.

A\$45 Saddle,\$32Cash



Our latest Swell Fork Saddle, 14-inch swell front, 28-in. wool-lined skirt, 3-in. stirrup leather, $\frac{3}{4}$ rig, made of best oak leather, guaranteed for ten years; beef hide covered solid steel fork.

THE FRED MUELLER
Saddle & Harness Co., Dept. R, 1413-15-17-19 Larimer St. Denver, Colo.
Send in your name for our catalogue now ready.

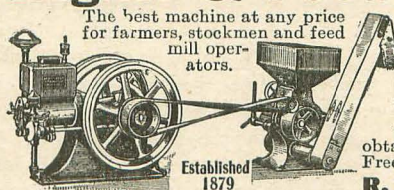
SHROPSHIRE RAMS

I have forty-five thoroughbred Shropshire rams for sale. Coming two and three years old. Prices right. Call and see what I have to offer or write.

FORRESTER H. SMITH

Amenia - - North Dakota

Engine & Feed Grinding Outfit



THE HOWELL ROLLER FEED MILLS have been wonderfully successful everywhere. They wear a life time, grind twice as fast with the same power as the best burr or stone mill made. Good money in custom grinding. Grinds Graham and Rye Flour as well as feed. Engine is of latest and most up-to-date design. Runs at proper speed to obtain best grinding results. Simple and Durable. Free Catalog D3 tells everything.

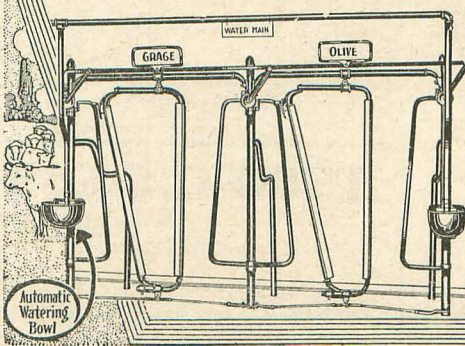
R. R. HOWELL & CO., Minneapolis, Minn.

Drew Carriers.

Dump Anywhere within a 45-ft Radius

Drew Swinging booms are accurately balanced, perfect-hinged, real successes. Drew Litter Carriers come in all sizes and have the newest improvements. Drew Feed Carriers for low-ceiling barns, with drop end to make shovel-rag easy are miles ahead in the labor-saving race.

Drew Sectional Barn Equipment



Buy What You Need

now; more as your herd increases. Each stall a complete inter-changeable unit. Can also be removed and gates substituted. Other new ideas: Automatic Watering Bowls, Combination Manger and Feed Box, Double Sure-Stops, etc. Remember—years of square dealing back the Drew guarantee. Write for latest catalogs.

Drew Carrier Co.
150 Monroe St.,
Waterloo, Wis.



Poultry Department



THE POULTRY BUSINESS AS IT IS TODAY

Michael K. Boyer,

No longer is the hen looked upon as an insignificant little creature, and the business of raising poultry and eggs for market as the work of a crank. The writer well remembers when even the United States Government ignored this industrious worker, and at that time we never read nor heard of a scientific argument in her favor, save what appeared in the poultry journals.

But it is different today. We now have men in all stations of life engaging in poultry culture, and at least a half dozen millionaires have poultry farms of their own, and take great pride in both the fancy and utility qualities of their flocks. At least two ex-Presidents of this country engaged in poultry culture after having left the White House, as also did one ex-Vice-President.

It has gotten to that point that it has become a question whether the American Hen had not better take the place of the picturesque eagle that has so long adorned the money issued by the U. S. Government.

Census reports tell us that in the United States we have today at least 280,345,133 chickens; 3,688,708 turkeys; 4,431,980 geese; and 2,906,525 ducks. Poultry is an asset on at least 88 per cent of the farms of this country, and at least 250,000,000 chickens, not counting other varieties of poultry are consumed annually. The Secretary of the United States Department of Agriculture says that our hens lay fully 2,000,000,000 dozens of eggs a year, amounting to enough money to pay the interest on the national debt.

Again we are confronted with the fact that the poultry and egg crops comprise 16.3 per cent of the total animal products of this country, and that exclusive of the eggs and poultry consumed by the owners of the hens, the eggs alone bring annually \$250,000,000, and the poultry crop is worth \$154,663,220 a year.

Still further improvement is shown in the fact that in ten agricultural colleges poultry husbandry is taught.

The Canadian Government encourages the breeding of poultry by government appropriations, pays the expenses of breeders and stock to American shows, and doubles in money and honors every prize won in the United States by Canadian fowls.

Still further testimony of the growth of the industry is evidenced by the publication of between fifty and sixty poultry papers, coupled with thousands of dollars annually paid for printing matter of all kinds, which includes catalogues, circulars, stationery, etc.

The poultry books written and published are among the largest and finest printed, and the sales of many of these works run as high as 100,000 copies. There are more poultry writers in the country than there are for all the other branches of livestock combined.

This does not end it. The manufacture of incubators and brooders is a wonderful industry. These factories employ from 350 people down, with a yearly output of 24,000 machines, as an average. One incubator factory alone is reported having done a business of \$500,000 in one year, and a conservative estimate is made of \$2,000,000 worth of business being done a year in incubators, brooders and supplies.

Then count the income derived by the railroad and express companies, figures that we are unable to obtain, and the sales made at fancy prices at the several hundred poultry shows held annually in the United States. Truly we have an enterprise here that outdistances all other crops and enterprises and it is annually growing.

ENORMOUS CHINESE HENS' EGGS

Consul Williamson, stationed at Antung, China, has a well-established reputation as a reliable and conservative American consul who reports things as he finds them; otherwise his latest report to the Department of Commerce would place him in the list of summer liars or at least weavers of fairy tales. He gravely reports that the hens of China think nothing of laying eggs running 5 or 6 and even 4 to the pound.

"It may be of interest to breeders and egg farmers in the United States," says Mr. Williamson, "to know that I have seen within the past week eggs weighing over 4 ounces, produced by an ordinary hen of no particular breed, fed on corn and kept in a confined in-

closure. This, however, is not a daily performance. The fowl referred to is a black hen, of no special breed, but resembling a Langshan. She lays an egg weighing 4 ounces or over at least every third day and lays an egg everyday for about a week or 10 days, when there occurs an interval of 2 or 3 days during which no eggs are laid. The smaller eggs average six to the pound. The shell is brown, with a circle of dark spots near one end.

"Other hens bought in the market average six eggs to the pound, with white or brown eggs, there being no standard, of course. What these hens could do if fed and cared for scientifically can not be told, but they should do wonders.

"It is common to buy from Chinese eggs that will average six to the pound, the smaller ones are also plentiful, but the chicken business is not yet understood by the Chinese and the hens get practically no care or attention. They forage and care for themselves. The largest eggs I have seen here averaged four to the pound, some being slightly below 4 ounces and others slightly over, some even 4½ ounces. These were from a hen kept by a man in Antung, whose hens get more attention and better food than the Chinese-kept hens. The best hen referred to was bought in the market for killing, but escaped that fate and has established a local record. This man has sent some of these eggs to Norway, where they were admired. It might be possible to improve the size of American eggs by the introduction and careful breeding of some of the fowls referred to, if American poultrymen are interested. I believe seven eggs to the pound is the highest American average." (Seven eggs to the pound as Mr. Williamson says is a high average, the Black Minorca producing among the largest eggs. The hen which can stand the racket of 4 eggs to the pound is some hen.)

FORCING CHICKS BY ELECTRICITY

According to a London item, the growth of young chickens is forced by the magic electric fluid. In the south of England, on the biggest poultry farm in the world, experiments of this nature have just been completed. Eight hundred chickens in two equal groups were nurtured, on the inten-

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QUALITY—UTILITY—EXHIBITION

Single Comb Rhode Island Reds, Barred Plymouth Rocks, White Plymouth Rocks, Light Brahmas, Buff Wyandottes.

BIRDS OF HIGHEST QUALITY: Winners in the following shows 1913: Minneapolis and St. Paul, Minn., Fargo & Valley City, N. D. Mating list free. WOLVERTON, ROUTE 1, MINN.

sive system—that is, in flats, almost trays, one above the other. One group of 400 was treated by the electric system, and so charged were the chickens with electricity that a shock could be distinctly felt if the finger were put to the beak of a chicken.

The chickens in this 400 grew to maturity or marketable size in five weeks and of the 400 only six, and these weaklings in the beginning, died. Of the other 400 nearly half died, it being late in the year for healthy growth, and the survivors took three months to reach marketable size.

This experiment was followed by other experiments in which similar, tho not as striking results were obtained. Trials on a yet larger scale are being prepared and there is hope that an instrument of real value in the intensive production of food has been found.

POULTRY NOTES

The carcass should be dressed immediately after killing. To allow the feathers to remain on for several hours will hasten decomposition.

In France parts of a carcass can be purchased in market—legs, wings, heart, or any part wanted. In this country it is the whole thing or nothing.

Neatness brings buyers. The best always goes first. Quick growth influences quick sales. The markets have a surplus of poor stuff. Poultry buyers are educated—they want the best.

Turkey hens are profitable until five years of age, but it is a good plan to change the gobblers every year. It requires twenty-eight days to hatch a turkey egg, and seven eggs is considered a setting. The nests should be on the ground.

It is equally as bad to overfeed as it is to underfeed poultry. There should be regular hours for feeding, and never a feast today and a famine tomorrow be allowed. Avoid too much carbonaceous food. Carbon is oil, fat, starch, sugar, etc.,—carbonaceous material.

If sexes are equal, geese pair. The laying season usually opens in February. Young ganders make better breeders than do young geese. As a rule geese are free from disease. Old geese are more reliable, and lay more eggs than do young geese. Geese live longer than do any of our domestic poultry.

Cockerels mated to pullets will do well enough; but, in the experience of the writer, there are stronger chicks

from a cock bird mated to pullets, or a cockerel with hens. Much, however, depends upon the general condition of stock. In referring to cockerels or pullets, birds are implied under one year of age.

The chief peculiarities of the English method of dressing poultry are: Killing by wringing the neck, not by chopping or sticking; feathers left on the neck for a few inches from the head, also a few feathers on tail and tips of wings; the breast bone is sometimes broken down by pressing it to one side with the thumbs, and the wings are twisted.

The duck generally lays at night. It thrives best on soft, succulent food. Strong, vigorous birds can be successfully bred at four years of age. When properly fed, when at eight weeks of age, green ducks will weigh nine pounds to the pair. The best prices for green ducks is given about May 1st. Then the price gradually declines until the month of July.

"Bagging down behind" is usually caused by the retention of eggs in the oviduct, followed by inflammation and tumor. When hens get too fat, eggs are often broken in the passage, and cause the same disorder. The tumors sometimes grow to enormous size, weighing the hen down. The presence of a male bird, when a hen is in such a condition, will aggravate the trouble.

"Farm-raised stock" is not always a guarantee of health and vigor. If farm-raised fowls are allowed to drink from dirty pools in the barnyard; if they are compelled to roost outdoors in all sorts of weather; if they must hunt their grain among the waste in the manure piles; we had rather take our chances with yarded stock. We like to know what our fowls eat and drink, and how comfortable they are at night.

Copulation does not fertilize the egg laid the same day. A study of the ovaries teaches that the egg that is laid today was already covered by a thin shell at least twelve hours before being laid. That meeting, however, should fertilize a series of eggs laid afterwards by the hen, altho it might be several days before fertility in eggs would be found. Some authorities claim that a male actually fertilizes ten eggs at the same time.

The so-called Creeper fowls, so much talked about some years ago, were nothing more than short-legged fowls, and not recognized as a breed. They came in nearly all varieties, but especially in the American and Asiatic classes. At one time an attempt was

made to get these short-legged fowls down to some standard, so as to have them uniform, but there apparently was not enough interest taken to have the idea put in practice.

Buy stock from good laying strains, if eggs mostly are wanted. Select stock for broilers from flocks that have plump breasts and broad backs. Such birds will "score" 100 in market poultry, and yet probably be disqualified for the show room. While it is important to keep poultry within the line of thoroughbred, there is no particular value in scores for market poultry. It is almost next to impossible to have show records and first-class utility qualities in the same stock.

In a paper read before the French Academy of Science, Prof. Balland, some years ago, showed by new and exhaustive analysis, the value of eggs as food and the enormous consumption of this product of the domestic hen. He showed that 25 per cent of the egg has a nutritive value; the rest is water. Ten eggs without the shells equals just about one pound of meat avoirdupois. During one year Paris consumed 538,000,000 eggs, or something near 125,000 dozens every day. On the basis mentioned these eggs are equivalent to the

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American Poultry
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meat from 168,000 steers per annum, figures that are almost staggering, but true if science is true.

Leg weakness in chicks is often due to the food being of a fattening nature, and the bodies in consequence become too heavy for the muscular strength of the chick's legs. There should be bran in the soft food that is fed, it being one of the best bone and muscle foods that could be given. Afflicted chicks should be given quinine water daily—made by dissolving five grains of quinine in a quart of drinking water. Also add bone meal and charcoal, and also give green food, daily.

The late P. H. Jacobs once said that outside of the cold storage process, which is too expensive for the farmer, there is no mode of preserving eggs so as to keep them fresh for six months. When we use the term "fresh" we mean similar in appearance to an egg newly laid. Even where the cold storage method is used there is something to observe before the eggs are placed therein, and in any case they differ from those recently removed from the nest. An egg is a perishable article. It may not decay as rapidly as a strawberry, but sooner or later its contents change.

Very often fowls, from some unexplainable cause, will become afflicted with swelled head and fever. Exposure to a draught of air, while roosting at night, however, is the most common reason, in which case the eye nearest the draught becomes first affected. In itself, swelled head is not ous, but when the lumps appear, it is one of the first stages of that disease. A very good treatment is to mix one part spirits of turpentine and four parts sweet oil. With this anoint the head, face and comb daily. Then give, twice a day, a pill composed of equal parts of bromide of potash and quinine—the pill to weigh one grain. Add, in addition, a teaspoonful of chlorate of potash to each quart of drinking water.

The only absolutely successful way to ship iced poultry is to use crushed ice. It should be shipped in barrels that are strong, with holes in the bottom. First place a layer of excelsior on the bottom of the barrel, than a layer of crushed ice. Lay the fowls neatly together and then cover them with another layer of crushed ice. Keep this up until the barrel is filled. When the top is reached, cover the last layer of fowls with an inch and a half of ice. The finer it is crushed the better. Place over this some excelsior, and over the top burlap. Poultry shipped in this way will never bruise, and arrives in the

market in excellent condition. Ice crushed as it is done for lemonade is the kind to use in shipping poultry. The crushed ice seems to form a crust in each layer, and keeps the poultry as sweet and nice as when first killed.

The Ontario Experiment Station made a series of experiments in testing fertility of eggs, and these are interesting. They separated ten laying hens from the male, and placed the eggs in an incubator each day to test them. During the first four days 70 per cent proved fertile, fifth day 61 per cent, sixth day 60 per cent, eighth day 12 per cent, ninth day 2 per cent, and tenth day all were infertile. Then they put a male with six laying hens which had not been with a male, and tested the eggs in the same way. They found 30 per cent fertile on the third day, 42 per cent on the fourth day, fifth day 50 per cent, sixth day 60 per cent, seventh day 70 per cent, eighth day 68 per cent, ninth day 70 per cent, and tenth day 74 per cent. It would seem then that nearly three-fourths of the eggs are fertile four days after the male is taken away, or a week after the male was put in. There would probably be some difference in the males, however, and number of hens might have considerable influence.

Rye is the poorest of poultry grains. Corn and buckwheat should be fed sparingly, as they are very fattening. Wheat leads as a well balanced food, and barley is a close second. Feeding too much buckwheat has a tendency to produce a white skin and light-colored yolks in eggs.

During incubation, eggs should be tested on the seventh and fourteenth days. At the first test the air cell should measure about a quarter of an inch, on the tenth day a half inch; fifteenth day, five-eighths inch; nineteenth day three-quarters inch. The measurement should be taken from the middle of the large end.

Newman says duck eggs for hatching should not be washed, or the oily, greasy covering on the outside shell will be removed, and they will not hatch so well. Hallock says he would rather wash the eggs before putting them into the incubator, than to use very dirty ones. Yet he believes that washing does injure them. He tried the experiment of putting eggs in one tray of his machine that were gathered from the bottom of the creek where the breeding ducks bathe in. He noticed that but twenty to twenty-five per cent of these eggs were fertile, owing to the length of time they were deposited in the water. At the same time eggs that were layed in the houses, or on land, gave eighty-five per cent fertility.

POULTRY ON THE FARM

We believe that every farmer should have a flock of paying poultry. To encourage our readers to read reliable literature on this subject, we offer for a short time two six-month's subscription: one to the "American Poultryman" and one to the North Dakota Farmer, for the names of ten farmers and a dime or five two-cent stamps. Why not do it now?

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School and Home

ELEMENTARY AGRICULTURE

Oct. 10, 1913.

Miss Ura Leader,
Ruraldale, N. D.

Dear Madam:

As per your request I am writing you again along the line of the lessons in agriculture for October.

North Dakota is certainly rich in its weed production. I know of no other state in the union that grows them more profusely or luxuriantly. This, however, is one of the very best recommendations for the fertility of our North Dakota soil. Were the soil impoverished or lacking in plant food it could not produce such crops of weeds.

While our weed crop, therefore, is a blessing this is no argument for allowing such a crop to grow unmolested year after year. Farmers should know the weeds of the locality, their habits of growth, and something of the methods of controlling them. As the pupils in your school are very soon to be directly interested in the affairs of the farm, if indeed they are not at the present time, a study of the weeds is entirely in place.

Let me suggest, therefore, that you and your school make an occasional noon hour tour of several of the farms in the immediate vicinity of the school house, gathering good healthy looking specimens, altho now dry and brown, of the various weeds found there. An hour or so next Friday afternoon taken from the regular routine spent in the collection of a large number of weed samples will be a profitable use of time. Again, allow the boys and girls to fetch in other specimens that they may find from time to time.

I think it would be a good plan to take two specimens of each variety. Save one entire—that is—with as little breaking up as possible. Shell the seeds from the second and throw the balance of the specimen away.

Now, if you can arrange a large shelf somewhere in your school-room

pile the weed specimens on this, separating one from another with pieces of newspaper. Put some weight at the top to press them down.

When the full collection has been made, begin the work of identification. Let your pupils name as many as they can. You may find it necessary to make some corrections. You can name some and the farmers of the vicinity will be able to name others. If, when you have learned as many names as possible, there are still others unidentified, send small samples to this office and we will undertake to get them correctly identified for you. Do not let the fact that you cannot tell them all worry you in the least. I know of several people who do not know everything. As soon as you have a specimen identified to a certainty file it away, properly labeled for future use, and shell the seeds from the second specimen, placing these seeds in a small vial, upon which you can stick a little gummed label, bearing the name of the seed. These little bottles should be about one and one-half or one and three-fourths in. long and one-half or five-eighths in. in diameter. I think you will be able to secure them at almost any drug store at a cost of

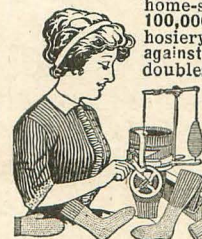
about one cent each. Let the district pay the necessary expense of this collection, if they wish. If they do not care to do so, furnish the funds yourself, in which event, of course, the samples will become your private property. You will find such a collection quite as useful as your reference library.

Having completed the identification of your specimens you can use both the plant and the seeds in exercises or games, especially on Friday afternoons. Your pupils will soon know both the weed plant and the weed seed at sight and a valuable piece of information will have been gained. Have your pupils note the general size and vigor of the weed, the type of the root, the shape of the leaf, the kind of flower, manner of seeding—whether in pod or head, etc.

Next, get opinions from your pupils as to which is the worst weed or set of weeds in the locality. Get their opinions as to methods of control. This will necessarily bring out differences of opinion, which differences may

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result in a formal debate some Friday afternoon. I think it would be well for the teacher in this connection to discuss cultivated crops, such as corn and potatoes, as a means of getting rid of weeds.

Now, you will understand, of course, that this is merely suggestive and given in barest outline. As you do this or something similar to it different ideas will come to you, and you will be able to make quite an extended, and, I am sure, a most interesting and profitable study of the subject of farm weeds.

Trusting that you will get along nicely with this and other subjects to follow, I am,

Yours very truly,
GORDON W. RANDLETT.

DODDER **Seventh Year—October** **O. A. Stevens**

This pest is as yet but little known to the farmers of North Dakota. This is partly because the plants which it chiefly attacks are not yet extensively grown, and also because the sale of seed containing seeds of dodder is prohibited by the pure seed law and many shipments containing it have been prevented from sale. However, it will doubtless appear from time to time on account of careless or hasty buying of seed. The Department of Botany of the Agricultural College is anxious to hear of any cases of its occurrence in order to learn the source of it, and to determine how much damage from it is possible in this region.

What It Is

The stem of the plant is scarcely larger than the smallest wrapping twine and of a reddish yellow color. It branches freely and reaches a length of several feet, having no leaves or green color. The plant starts from a seed, and when it is but a few inches high, fastens itself to some other plant into which it sends little suckers, which draw the nourishment from the other plant. After this, the dodder has no connection with the ground, but lives entirely at the expense of the other plant. In late summer it bears a great many small white flowers, each one producing four seeds.

Kinds of Dodder

Nearly one hundred species are known, and are found in warm and temperate countries all over the world. We have one very common native species, the Hazel Dodder, which is found usually in low places, growing upon coarse weeds, such as kinghead, sunflower, goldenrod and asters, and small woody plants as willows, wolf-

berry, etc. This has not been reported in crops, but it is found upon a great many kinds of plants.

The ones in which we are most interested are: Field Dodder, Clover Dodder, Small-seeded and Large-seeded Alfalfa Dodder. The last named is native of America, the others have been introduced from Europe in clover and alfalfa seeds. The last two are found especially on alfalfa, the others on clovers also. Another kind grows upon flax, but has not to my knowledge been reported from this state.

Damage

This may amount from partial to complete destruction of the crop, according to conditions. A reduction to the yield is inevitable. In our climate it would seem that the danger of winter killing, in alfalfa and clover would be increased thru weakening of the plants. In European countries, where seed testing has been conducted for many years, more attention is paid to dodder than to any other weed. Seeds which contain dodder are rapidly becoming unsalable on account of the laws enacted against it.

Remedy

Do not sow the seeds. They are often difficult to detect, but the seed laboratory is always at your service. The seeds of the clover, and small-seeded alfalfa dodder can be removed from alfalfa and red clover by careful cleaning. The seeds of the others are larger and can be only partly cleaned out.

When established, the plants should not be allowed to seed. All of the affected crop should be cut and burned or plowed under.

Information concerning the occurrence of this pest in the state is earnestly requested. Send samples to or address, Department of Botany, Agricultural College, N. D.

WILD OATS **Seventh Year—October** **W. C. Palmer, Agri. Ed. A. C.**

Wild oats are a bad weed in continuous grain growing, but they cannot do much harm in a good rotation.

In eradicating wild oats the point to be kept in mind is to get the wild oats in the ground to grow but to kill the plants before they go to seed. It is easy enough to do this if no crop is raised, but a crop may be needed. Barley and millet can be grown and the wild oats eradicated at the same time. When these crops are used either disc or plow the land shallow in the fall and harrow in early spring, the object being to make a good seed bed so the wild oats will grow. Plow

the land from the first to the 20th. of June depending on the location in the state. This will allow a maximum of the wild oats to germinate. Then sow to barley or millet at once. The barley will grow rapidly and will ripen as soon as the wild oats. Cut the barley a little on the green side and but few wild oats will scatter. The millet being cut for hay is the more effective. It also leaves the land in splendid shape for growing a good crop of grain. Two years of this kind of treatment will remove most of the wild oats.

Rye can also be used in killing wild oats. The rye can be sown either in the stubble or the land can be plowed for it. Plowing will give the best results on heavy land. Sow in the latter part of August. The rye, and especially on plowed ground, shakes out the wild oats. In this way wild oats can be killed and a crop of grain raised at the same time.

When growing a crop of grain as wheat or oats, that takes longer to ripen than the wild oats, the wild oats will increase from year to year.

TO CONSERVE MOISTURE

Eighth Year—October **L. R. Waldron, Supt. Dickinson** **Sup-station, Dickinson, N. D.**

If one turns over a board or scrapes away some straw lying upon the ground, the ground is seen to be moist while the surrounding, exposed ground may be dry. If one scatters straw upon dry ground, it will be found in a few days that the dry ground has become moist. The upper few inches of surface will be seen to have accumulated moisture. This moisture would have been given up to the air and thus lost to the soil had not the straw been applied. A layer of dry soil acts in the same way when applied to land. It is plain that this layer of dry soil can be applied to the land from the land itself, by the use of suitable machinery. The dirt mulch can be applied with but little cost and because of this, and because it saves the moisture so well, it becomes of incalculable value to farming in such a state as North Dakota. After a heavy rain, one observes the soil in the garden or in the corn field to be packed and hard; by running over the ground with a cultivator, the packed soil is broken and a mulch is established. The formation of the mulch prevents in great measure the loss of moisture. The loss of moisture is prevented by the stoppage of the capillary movement of water. It would be much the same if

one were to cut off a lamp wick and fasten the two cut ends by wires. Oil would not pass from one part of the wick to another. Forming a mulch on land does not entirely prevent the loss of moisture, but the moisture saved may amount to 50% or even considerably more.

There are several conditions that affect the dirt mulch. The deeper soil mulch is the more effective but the deep soil mulch is more expensive to make and the deeper the mulch the more fertile soil there is lost for the plants. A soil mulch becomes poorer with age and so it may have to be renewed occasionally. This is especially true if a rain should come. Dirt mulches can be better made when the soil is moist.

AVAILABILITY OF PHOSPHATES IN RELATION TO SOIL ACIDITY

Eighth Year—October

In an article on this subject in the last report of the Wisconsin Experiment Station A. R. Whitson and C. W. Stoddart call attention to the fact that the fertilizer tests made by the agricultural experiment stations thru-

out the country have agreed in showing that soil acidity is almost always accompanied by a need of phosphatic fertilizer. They tested the fertilizer requirements of a large number of Wisconsin soils both in the field and in the plant house and the results confirm "the conclusion that acid soils need phosphates, and it will be possible, by a careful test of a soil with litmus paper, to tell if it needs, or will need in the immediate future, a fertilizer. * * *"

The litmus-paper test can be made in the field, if the soil is moist enough, by inserting a broad bladed knife into the ground and opening a slit wide enough to insert a rather long, narrow strip of litmus paper. With the knife blade the soil is pressed closely against the litmus paper and at the end of about three minutes the paper is carefully removed from the soil. If the paper shows red spots, the soil is acid. If the soil in the field is not moist enough for this test a small portion of it may be placed in a porcelain dish, moistened to the right consistency with distilled water and worked up with a knife blade. By pressing a piece of litmus paper between two

portions of the soil with the knife blade and leaving it three minutes, acidity or nonacidity will be shown by the presence or absence of red spots. In every case, whether in the field or in the laboratory, care should be taken that the hands touch the soil as little as possible, because perspiration will turn blue litmus paper red, and lead to erroneous conclusions. The knife blade, the distilled water, and the porcelain dish should be tested to see that they are free from acid.

The reason for this need of phosphates in acid soils may possibly be found in the fact that acids dissolve phosphate minerals, and soil acids, whether due to decomposition of organic matter in the case of peat or to long cultivation in the case of upland soils, will undoubtedly have a decided solvent action on phosphates in the soil, particularly on the calcium phosphates. When once in solution these phosphates are readily washed out by heavy rains. There is undoubtedly considerable phosphate material still remaining in acid soils, but it is at least unavailable to the plant, and it is possible that it may be a phosphate of iron or aluminum, such as dufrenit,

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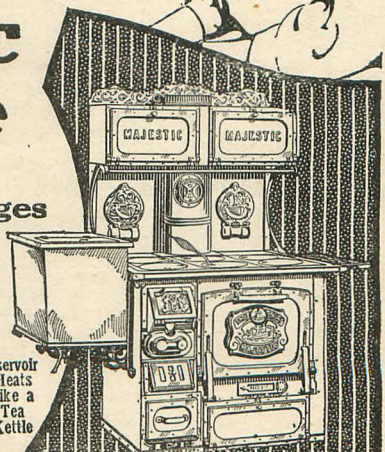
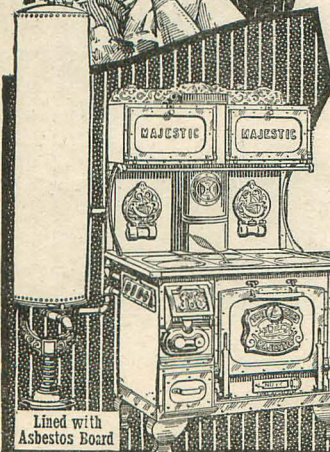
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or wavellite, insoluble in weak acids.

Soils not acid probably contain considerable calcium and magnesium carbonates, which going into solution as the bicarbonates in water charged with carbon dioxid, serve to retain the phosphorus in the form of tricalcium phosphate, relatively insoluble in the soil moisture and yet soluble enough to supply the needs of the growing crop.

RENOVATION OF WORN-OUT SOILS

October—Eighth Year

(Continued from September Number)

Effects of Tillage

Improper methods of tillage add very greatly to the evil effects that result from lack of humus. In many parts of the country the land is plowed only 3 or 4 inches deep. Below the plowed stratum the soil becomes sour, densely packed, and unfit for plant roots. When such soils are plowed deep and this sour packed subsoil is mixed with the upper portion, the growth of many crops is greatly retarded. This has led many farmers to believe that deep plowing is ruinous. A much better method is to plow a little deeper each year until a depth of 8 or 10 inches is reached. This gives a deep layer of good soil, particularly if the supply of humus is kept up.

Increasing the Stock of Humus

There are three general methods of supplying humus to the soil. The first and best is the addition of stable manure. When properly managed it adds large quantities of both plant food and humus. When stable manure is not to be had, we may plant crops for the purpose of turning them under, thus adding large quantities of humus at comparatively little cost. Plowing under green crops is called green manuring. A third method of adding humus is to grow crops like clover and timothy.

Types of Farming that Build up the Soil Quickly

The quickest way to build up a worn-out soil when barnyard manure is not plentiful is to give it a course of treatment like that just described; then grow only forage crops, buy grain to feed with them, and return all the manure thus produced to the land. Dairy farming permits such a system to be practiced. No other type of farming builds up land so rapidly.

Summary

We may sum up the matter briefly thus: To build up and maintain fertility in the soil, feed a large part of the crops and return the manure to

the land. If manure is not available, plow under crops grown for the purpose. Plow deep (but do not subsoil). Grow leguminous crops for the nitrogen they add to the soil.

Commercial fertilizers and lime may be important means of improving the soil, but the fertilizer requirements of different soils and different crops in different seasons are so little understood that we are not yet in a position to make positive recommendations that are of general application.

CORN AS A ROTATION CROP

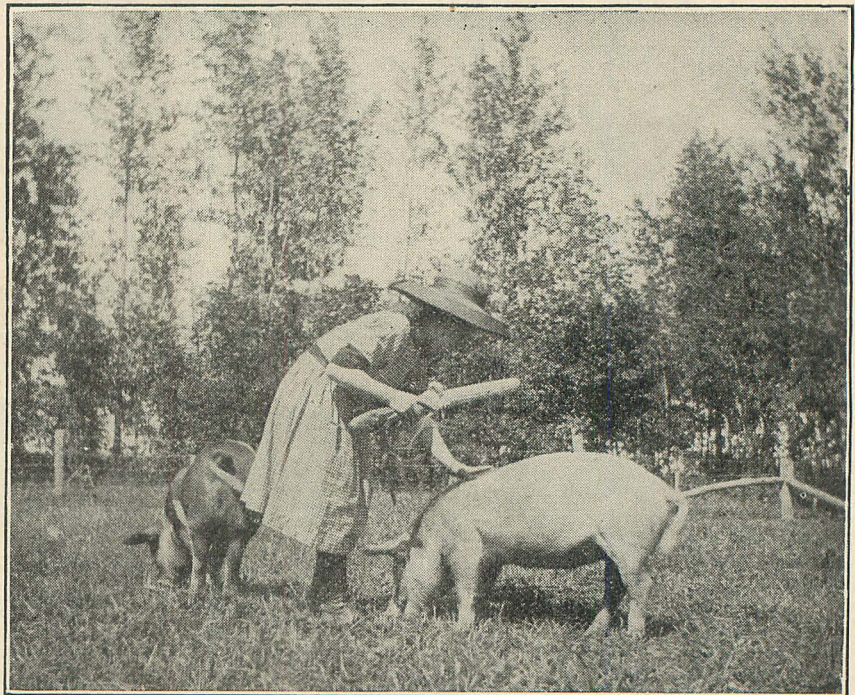
November—Seventh Year

From Address Delivered at the Casselton Corn Festival, by J. H. Worst, Pres. A. C.

Corn is unquestionably one of the most profitable crops that can be grown in the state. Where rotation of crops is practiced, it is especially valuable. In fact a cultivated crop, such as corn, is the most essential element in a crop rotation. For the farmer who does not practice crop rotation, there is little to be said. He

fluence of corn is almost equal to, and frequently greater in value than the corn crop itself.

North Dakota farmers must not lose sight of the fact that moisture is the one essential element that cannot be overlooked. From the time the seed germinates until the harvest is ripe, there must be constant moisture to supply the needs of every growing plant. Lack of moisture for a single day will impair the growth of a plant. Insufficient moisture for a week will seriously cripple the crop, while a couple of weeks of drouth may entirely destroy the harvest. In all countries, therefore, not over-supplied with moisture, crops should be grown with a view to economy of moisture. I question, moreover, whether there are many seasons in North Dakota where the moisture is insufficient, provided none of it is wasted or stolen. Where weeds, however, are permitted to grow, drouth conditions frequently prevail where otherwise there would be plenty of moisture. In other words, moisture stolen by such weeds as wild oats, mustard, French weed, etc., and the failure to provide a soil mulch during the growing season, leave in-



Corn is Not Only a Hog Raiser, but It is the Great Weed Killer.

is pursuing a system of farm management that is doomed to ultimate failure in almost every instance. The failure may not occur for a number of years, but the system must eventually end in disastrous failure.

Corn is the most valuable crop, not only on account of its immediate money value, but the secondary in-

sufficient moisture for the crop; hence we attribute to lack of rainfall what should be charged to lack of cultivation and to the weeds.

In some sections of the state it is reported that on account of wild oats in the wheat, the dockage this fall amounted to as much as thirty pounds per bushel. It would be folly to ex-

pect farming to be profitable where weeds are grown to even a fraction of this extent. Moreover, men who at-

I question whether corn can always be safely depended upon in this state for crib purposes or to be fed or sold

owing to the richness of our soil, corn of good size can be grown to the



Make the Boy a Partner on the Farm.

tempt to grow wheat in partnership with weeds will find that the seasons do not provide sufficient moisture for both.

Now the cultivation of corn is not only profitable within itself, but tends to eliminate the weeds by the most feasible method, and at the same time the cultivation it requires conserves the moisture and leaves the ground in most excellent condition to form a seed bed for the next year's crop.

There is another element that enters into the business of dry-farming, which has been fully demonstrated in Utah and other western states; namely, where the soil contains abundance of plant food in the form of humus (organic matter, such as manure), only a little more than half as much moisture is required to produce a crop as in soils deficient in available fertility. The humus not only retards evaporation, but owing to bacterial activity such an abundance of plant food is made available that only a little more than half as much water is required to sustain the growing plants; this for the reason that the water consumed by the plant is more highly charged with the elements known as plant food. This works on the same principle that a gallon of pure milk fed to pigs is as nourishing as double the amount that is half water.

as shelled corn. The seasons are rather short for ripening corn except of the very earliest varieties, which do not as a rule yield heavily; but

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glazing stage with almost absolute certainty. At this stage, it is ready for the silo to be put up in the form of ensilage, which contains more feeding value than the shelled corn and dry stover from an equal area.

This is especially true when the ensilage is fed to dairy stock. Ensilage, however, can be fed with profit to almost any kind of livestock, but there is undoubtedly more money value in feeding it to dairy stock. Feeding ensilage thus on the farm affords manure, which will put the soil in condition to produce a crop with but little more than half the rainfall that is required on thin, lean, unfertilized land.

It will thus be seen that corn plays a large part in making a semi-arid region, that is, where the annual precipitation is less than twenty inches, almost absolutely reliable for growing cereals. The corn in the form of ensilage is not only a very profitable crop for its money value, but its indirect influence upon the succeeding crop makes it doubly valuable. In fact, some very good farmers have expressed the opinion that it would pay to grow a crop of corn simply for its beneficial effect upon the ground in cleaning it of weeds, conserving moisture, and providing an almost perfect seed bed for the succeeding crop. Add to this the manurial value of the corn when fed on the farm, and its effect upon the conservation of moisture, and the very important place that a corn crop plays in farm management can be readily appreciated.

In my opinion about one-fifth of the average farm should be cultivated in corn, every year. This would enable the farmer to clear the weeds from about one-fifth of his land and manure another fifth, every year. By feeding the ensilage to dairy stock he should have an income from the milk produced that would support his family and meet all ordinary expenses. It would practically eliminate the elements of chance or uncertainty from agriculture and put the farmer upon the basis of an assured income every year. It requires work, it is true, and very regular work at that, but a man's success at farming depends very much upon the kind of work he does and the painstaking character of it.

By growing corn in this way, and taking into consideration its far-reaching effects upon moisture—not only conserving it directly, but at the same time destroying the weed thieves that steal water in large quantities from the soil, corn becomes the most profitable crop that can be grown on the farm.

How to select seed has been explained so often that it is not necessary to speak of it here. However, I would

strongly urge every corn-grower to select not only seed for the following year, but when conditions are very favorable for selecting seed corn, as this fall, to select enough for two years. Next season may not be so favorable for selecting good sound, well-ripened corn.

I predict that the farmers of the future will prosper about in exact proportion to the amount of ensilage they feed to livestock upon their farms. Corn shows such as this one at Casselton have far-reaching influences.

That corn can be relied upon for making ensilage with far greater certainty than a profitable wheat crop can be relied upon, I am confident. Moreover, the cultivation of corn is bound to raise the price of land up to its real value as compared with the lands in Illinois and Iowa. The improvement in crop yields which the cultivation of corn will bring about alone will increase the productive value of the land here at least 25 per cent. You can afford to encourage the cultivation of corn. You cannot afford to do otherwise.

Teaching Elementary Agriculture

November - Seventh and Eighth

(As our date of publication is too late for some of the work in the month of issue, we have asked Prof. Randlett to write his letter for the succeeding month. The November issue will have the work for December. We trust this feature of the North Dakota Farmer will be appreciated by parents as well as by teachers and children.—Publisher)

Agricultural College, N. C.D.

October 15, 1914.

Miss Ura Leader,
Ruraldale, N. D.

Dear Miss Leader:

If my suggestions to you are to be of any value I must of course get them to you in ample time. Therefore the occasion of this letter on your November work.

With your seventh grade class you are to collect specimens of corn. I trust you will not neglect this, as every boy and girl as well, grown upon the North Dakota farm, should be familiar with the type and varieties of corn that do well in this state. North Dakota is fast becoming a corn growing area. This cereal bids fair to occupy a large place in our cropping system, perhaps not more for its own value than for its very beneficial influence in rotation. You are aware, of course, and will point out to your boys that there are two general classes of field corn. One is known as dent, and the other as flint. Popcorn

and sweet corn are not recognized as field corn, tho some farmers grow quite large areas of the latter for feeding purposes.

The dent varieties are so named because of the fact that the crown of the kernel is indented during the ripening process, while the flints grow smooth and become glazed over at the crown. This is due to a different arrangement of starch in the kernel. It will be an interesting exercise for your pupils to cut kernels of both classes with a sharp knife and note the arrangement of the softer and harder portions in each and consequently why one is dented in at the crown and the other not.

Several of the principal varieties are mentioned in the course of study. One or two of them are but little grown at the present time in this state. I refer to Minnesota King and King Philip particularly.

Golden dent is perhaps the smallest and earliest maturing of all the other dent varieties. The ears are rather short but of fairly good diameter. The cob is extremely small, always should be, while the kernels are comparatively long. The cap of the kernel is of a golden yellow color, while the side of the kernel is lighter or more of an amber color. This lighter color can usually be seen between the rows, which are somewhat furrowed. This variety ripens early and will produce a higher shelling percentage of corn to cob than any other variety raised in the state. The principal objection to it is that it is rather small and has a tendency to produce quite a large percentage of nubbins.

Northwestern dent is a large variety, red in color, having a white cob. It is magnificent looking corn when viewed from a distance of ten feet or more. Upon close examination it never shows the quality that some of the other varieties do. Its cob is extremely large, the kernels shallow. This gives it a low shelling percentage of kernel to cob and consequently a lower feeding value. While it is considered an early maturing variety, yet in all exhibits and shows it invariably presents more or less immaturity. It, however, is the most popular corn in the state; farmers as a rule like it very much.

Minnesota 13 is a golden yellow corn considerably larger than golden dent. The ears are rather short compared with their thickness. The kernel is good length, always broad at the crown, hence does not show the furrowing between the rows as seen in the golden dent. It is especially adapted to the southern counties of the state, altho it is grown more or less successfully even in the northern counties.

Minnesota 23 is a variety not mentioned in the outline, yet coming into

considerable prominence. It is slightly larger and later than the golden dent variety. The kernels are of a very pale yellow color with a white crown, hence known as a white cap yellow dent. The cob is of a pale red color.

Gehu is a small pale yellow low growing flint corn. It is well adapted to high latitude and altitude. It yields fairly well and would be a good general purpose corn if it were not for the fact that it grows so low on the stalk. This prohibits the cutting of it with the ordinary corn binder.

Mercer is a large yellow flint and grows sufficiently high to be harvested with the binder. Mercer and Triumph are very much alike, the latter being considered slightly larger and a little later.

Longfellow is a yellow flint bearing a long slim ear and always eight-rowed.

Get as many samples of these varieties as it is possible for you to collect. If you cannot get them all be sure to secure those that are adapted to the conditions of your particular locality.

Please note what is said in the last paragraph of the outline for November. You cannot teach agriculture successfully without making use of apparatus and illustrative material. It will necessarily cost a little money to secure these. Make your director understand this, if possible, and have him secure the necessary specimens and appliances to remain the property of the school. If he will not do it, secure them yourself and add them to your private stock of equipment. You will be a better teacher for having these in your possession and understanding how to use them intelligently.

I believe you suggested to me that you also have a small class in eighth grade work and would like a few suggestions on the outline for that grade.

You are aware, of course, that many, many thousands of dollars are spent every year in this state in the purchase of farm implements and further that a great many thousand dollars are absolutely wasted from allowing these machines to rot and rust down in the fields and along the roadsides. Much of this great waste of the state may be checked by instilling into the minds of the boys and girls the necessity and good citizenship of proper economy. Of course, a machine that is kept in proper repair will outlast by far a similar machine that is allowed to work in poor repair until some of its parts break, when it is cast aside and a new one put in its place. Building material is expensive, but the material necessary for a machine shed will cost much less than the purchase of an extra number of machines necessary during a period of ten and perhaps five years. Not only machines should be kept in re-

pair, but buildings, fences, road, bridges, etc. It is economy. It is satisfaction. It is citizenship.

I think you will find it an exercise of much interest on the part of eighth grade pupils to work out a plan of an ideal homestead. I know of nothing at the same time that calls the faculties of the boy or girl into play in greater degree. To sketch out a homestead well requires not only skill of execution but calls for imagination, judgment and careful thought in every way. Do not expect to get results on this in a day or two or even a week. Let your boys and girls work on this scheme for a month or even let this be a part of

the work in agriculture during the entire term. The girls perhaps will be more interested in sketching out a house plan with a good arrangement of rooms and especially the arrangement and furnishing of the kitchen.

Get as many references as you can from as many sources as you can.

Whenever you feel that I can be of assistance to you, I trust you will write me.

Hoping that you will get along nicely in the November work with both your seventh and eighth grades, I am,

Yours very truly,

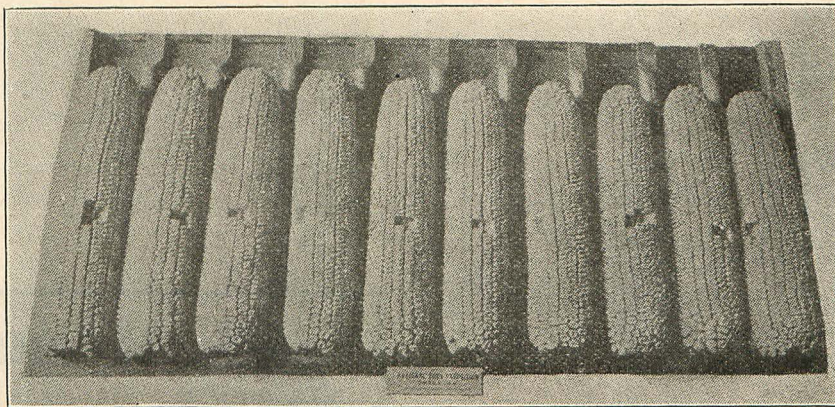
GORDON W. RANDLETT

How to Select Samples of Corn for Exhibit Purposes

November—Seventh Year

Inselecting samples, study carefully the score card, which is shown herewith. It will be used in the National Corn Exposition this fall. In the main the

The individual ear of corn should be of good size, according to the variety and place where it was grown, the rows should be straight and regular, it should



An Ideal Corn Exhibit

samples should be uniform in color, size, shape, etc. Particular attention should be given to the features which bespeak economic value; in the ear of corn, for instance, the soundness of the kernel, the maturity, the freedom from injury of any kind. Trueness to type or variety characters is important. The viability is an important factor as grains on exhibit are usually judged from a seed standpoint.

Corn

Ten-ear samples of corn should be uniform in length, in circumference, in straightness of rows, in color, in filling out of butts and tips, in size and character of shank scar, and unless it be a peculiar variety character, white corn should have a white cob and yellow corn should have a red cob. Some varieties, however, vary from this general rule.

be well filled at both butt and tip and generally speaking, should be cylindrical. Great care should be taken with all corn samples to prevent having any kernels removed from the ears. It does not

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necessarily bar a sample from competition if kernels are removed, but it is much preferred and the sample stands better chances to win if the kernels are all present. There is one exception to this general rule, viz., that samples which "graduate" from local contests, county fairs, and state shows may be permitted to have a few kernels removed from the center of the ear. The

ferred. The same number of rows on each of the ears means that if the circumference of all ears are the same that the kernels will be of uniform width. The indentation of kernel must be uniform from tip to butt, not only on a single ear but all ears combined.

The score card here given for corn, will not be found perfect in every detail, but as a safe guide in the selection of

corn exhibit purposes it will prove useful. Corn from each state will be judged by the score card from that state.

SCORE CARD FOR EAR CORN

Salient Points	Intrinsic Points	Standard Score	Sample No.	Corrected Score
	1. Form of ear.....	10		
	2. Butts.....	5		
	3. Tips.....	5		
	4. Length of ear.....	10		
Yield 50 Points	5. Circumference.....	8		
	6. Kernel arrangement.....	2		
	7. Space.....	2		
	8. Kernel shape.....	2		
	9. Kernel uniformity.....	1		
	10. Per cent corn to ear.....	5		
Variety Characters 15 Points	1. Color of grain.....	8		
	2. Color of cob.....	2		
	3. Kernel indentation.....	3		
	4. Kernel shape.....	2		
Vitality 25 Points	1. Luster.....	5		
	2. Germ color.....	5		
	Size.....	8		
	Shape.....	2		
Market Condition 10 Points	3. Kernel condition.....	5		
	1. Maturity.....	8		
100 Points	2. Freedom from injury.....	2		
	Total.....	100		

removing of these kernels is an absolute necessity in careful judging of competitive exhibits.

Uniformity

This is a very strong point in the selection of show corn. Have all ears of the same length, and of the same circumference; if cylindrical all of them cylindrical, if tapering all of them tapering, but the cylindrical ear slightly tapering at the tip is much to be pre-

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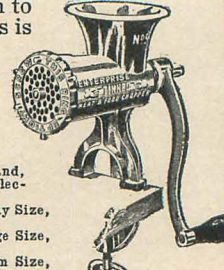
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Tomato Preserve

Scald and peel carefully small tomatoes, not too ripe; the yellow pear-shaped ones are best. Prick with a needle to prevent bursting; add an equal amount of sugar by weight and let stand over night. Then pour juice into preserving kettle and boil until a thick syrup; add tomatoes and boil carefully until transparent. Slice three lemons thin and cook with tomatoes.

For One Gallon Sliced Tomato Pickles

Slice one-half bushel green tomatoes and sprinkle with salt, let them stand over night. In the morning wash and drain well. Cook in equal amounts of water and vinegar, then drain. Take one and one-half quarts vinegar, one and one-half cupfuls sugar, two spoonfuls of cinnamon, one teaspoonful each of cloves, ginger, mustard, allspice and a little red pepper. Boil all together, then put in the tomatoes and boil a little while. These pickles will keep in a common stone crock all winter.

Sliced Cucumber Pickles

Slice cucumbers and onions, place in layers in a jar until you have two quarts. Add three tablespoonfuls white mustard seed. One tablespoonful of sugar. Three tablespoonfuls of salt. Add a few nasturtium seeds. Cover with cold vinegar.

Take cucumbers about three inches long; wash and pack in fruit jar tightly. To one gallon of vinegar add one cup salt and a piece of alum the size of an egg; let come to a boil and pour over pickles and seal. Sugar and mixed spices may be added if so desired.

Mustard Pickle

Two quarts small cucumbers, two quarts small onions, two heads cauliflower, two quarts small green tomatoes, six green peppers sliced; celery and Lima beans are good. Put all in a weak brine, let stand 24 hours. Drain and scald in water.

Pickle: six tablespoonfuls ground mustard, two tablespoonfuls turmeric, two cupfuls sugar, one cupful flour, two quarts vinegar. Stir well and cook until thick. Pour over drained pickles.

Green Tomato Pickles

One peck of green tomatoes sliced, six large onions sliced. Mix these and throw over them one cup salt. Let stand over night. Next day drain

thoroly and boil in one quart vinegar, mixed with two quarts water, fifteen minutes. Drain; take three quarts vinegar, two pounds brown sugar, one-half tablespoonful white mustard seed, two tablespoonfuls ground allspice, same of cinnamon, cloves, ginger and mustard. Put all together and boil ten minutes.

Pickled Onions

Select small, white onions and remove brown skin. Put as many onions in a pan of boiling water as will cover the bottom. As soon as they look clear on the outside, take up as quickly as possible and drain on a cloth until cool. Scald some more and so on until all are used. Put in wide-mouthed bottles and pour over them white wine vinegar, hot but not boiling. Then add whole mustard seed, a teaspoon to a pint bottle and a tiny red pepper.

Chili Sauce

Twenty large tomatoes, four large onions, three peppers, chopped fine, two cupfuls vinegar, two cupfuls sugar, one tablespoonful cinnamon and salt, one teaspoonful cloves. Boil until thick about one hour. Cork while hot.

Tomato Preserves

Three pounds tomatoes, pared and cut in small pieces, three pounds sugar, two lemons, sliced very thin. Boil slowly three hours.

To Launder Flannels

Never allow flannels to remain a long while in water. After they are washed, hand them out to dry as quickly as possible, ironing them with a moderately hot iron while they are still damp.

When Cooking Cereal

A few moments before serving rolled oats, add a cupful of sweet milk, and stir thoroly. You will find the cereal very much nicer than when only water is used to cook the oats.

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